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The greatest advance in diabetes mellitus during the last few years has been in its treatment, and I mean to reverse the usual order of things, and speak of the results of the new treatment in diabetes first of all, and then consider its mode of action. Since starting the preparation of these lectures, I heard with pleasure that Dr. Langdon Brown had also chosen diabetes as the subject of his Croonian lectures this year. The subject is so large that I can only touch upon one aspect of the disease. It is a satisfaction to me that Dr. Langdon Brown will be able to fill up my deficiencies, and further, I shall feel myself free to leave out many things that I might otherwise feel bound to include, and I can include other matters in connexion with acidosis, a subject I am most anxious to discuss fully.

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The principle of fasting in diabetes is not new.

Von Noorden approximated rather closely to it in his diet of vegetables and eggs. This diet, taken for two or three successive days, was followed by a day or two in which large amounts of oatmeal were eaten. It was found that the oatmeal was utilised to a very considerable extent, the glycosuria often not increasing at all. He attributed the benefit of the diet to the specific action of the oatmeal, when it was really the semi-starvation of the vegetable and egg diet that raised the tolerance of the individual and enabled him to utilise the oatmeal. At this time physicians were in the habit of employing an occasional fast day to get rid of the last traces of a persistent glycosuria.

It may be said that the principle of fasting in diabetes was "in the air" at the time of its first announcement. This has been the case with many other important discoveries. To Guelpa belongs the credit of first putting forward the treatment.

He believed that many forms of chronic disease were due to auto-intoxication from over-feeding, particularly with protein food, and in this he followed the well-known views of Chittenden. He tried periods of fasting for three days, accompanied by free purgation by means of sodium sulphate. These fasting periods were repeated at suitable intervals. He claimed that great benefit resulted from the treatment in many different chronic diseases and even in diseases of the eye, but his most conspicuous success was with diabetes; in many severe intractable cases the sugar disappeared in two or three days.

These observations were not accompanied by any experimental work to determine the nature of the "cure," and it is perhaps due to the vagueness of his speculations on auto-intoxication and the use of his treatment for so many different diseases that the extremely valuable results in diabetes were overlooked. He did not certainly get the credit he deserved. An account of Guelpa's work was published in 1910.[1] It is remarkable that it had practically no influence on the treatment of diabetes in this country.

There is perhaps another reason for this neglect, and this applies to the Von Noorden treatment and the occasional fasting days—the sugar always came back on resuming the previous treatment. I think the most important part of Allen's work[2] is that it not only gave an indication as to why fasting was successful, but it also outlined measures to prevent the return of sugar when the fasting was complete. This may be summed up in a few words. The object is to keep the patient thin: the metabolism is lowered to such an extent that the pancreatic hormone, which is never completely absent, is sufficient to answer the needs of the body so far as carbohydrate is concerned, so that glycosuria is abolished.

The foundation of Allen's treatment was based on experiments with depancreatised dogs. These diabetic animals lived longest if the glycosuria was abolished by starvation, and they were subsequently only allowed small quantities of a non-carbohydrate diet. They remained thin but kept active. Other animals allowed to eat as much as they wanted put on weight to begin with, but later wasted in spite of enormous appetites, and finally died of cachexia.

Allen applied these principles to human diabetes directly. The patient was starved until sugar-free, and then food was added in small amounts each day, beginning with carbohydrate and protein, until the limit of his carbohydrate tolerance was reached. His diet was arranged permanently below this level. Fat was then added to the diet in sufficient amounts to prevent the patient losing weight.

To Allen is due the credit, not so much of initiating the fasting treatment, as in first defining the principle that the diabetic must be permanently underfed. While giving Allen his due, we, in London, should remember that the same principle of fasting and underfeeding was independently discovered by Graham, who was working under the auspices of Dr. Garrod at St. Bartholomew's Hospital.

This work was unfortunately cut short by the war. It was largely inspired by Hurtley's researches[3] on the four carbon atoms in diabetic urine. Graham first recognised that the benefit of Von Noorden's vegetable and egg diet was due to the semi-starvation and that the oatmeal and potato days were valueless. He adopted the practice of complete starvation, followed by the administration of food in successive steps; in fact, his principle was the same as Allen's, though the details of his practice were slightly different.

RESULTS OF THE NEW TREATMENT.

The success of any treatment is measured by its capacity for prolonging life, and at the same time allowing the patient to carry on his usual activities. In diabetes it is the first point that will indicate success or failure.

Joslin[4] has attempted to answer this question by treating statistically his 408 fatal cases, seen between 1893 and 1915, and his fatal cases seen between 1893–1916. The year 1916 added 92 fatal cases to the 408 old ones—i.e., there were 500 cases altogether in the longer period.

In the period 1893–1915 16·9 per cent. of the cases were fatal during the first year of the disease; on adding to these cases the 92 new fatal cases of 1916 the percentage of first-year fatal cases is reduced from 16·9 to 14·8. This argues a considerable improvement in treatment because only 5·4 per cent. of the new 1916 cases died during the first year.

In presenting our results with the new treatment at Guy's Hospital I should like to say that in all the cases the treatment has been carried out under the supervision of Dr. J. H. Ryffel or myself. I should like to thank my colleagues at the hospital for giving us the facilities for carrying out this treatment, and especially would I thank Dr. Ryffel for his care in keeping the statistics and for his allowing me to quote them extensively. It has not been possible to adopt Joslin's method of presenting the statistics, as it is practically impossible to follow out the after-histories of hospital patients. Instead the number of deaths from diabetes in hospital up to 1916 has been compared with the number of deaths in our own cases.

TABLE I.—*Mortality in Diabetes Treated at Guy's Hospital.*

A. OLDER METHODS OF TREATMENT.

Date.	No. of cases.	Deaths in hospital. Total.	From coma.
Cases under Dr. Pavy.			
1883–88	53	9 (17%)	4+
General Medical Wards.			
1906	21	4	2
1907	13	5	3
1908	15	1	0
1909	22	6	5
1910	25	3	2
1911	20	6	4
1912	16	4	2
1913	27	5	5
1914	19	5	4*
1915	15	4	4*
1916	8	3	3*
Totals	200	46 (23%)	34 (17%)

B. TREATMENT BY FASTING.‡

Date.	No. of cases.	Deaths in hospital. Total.	From coma.
Group I.			
1916–18	18	0	0
Group II.			
,,	12	1 (phthisis).	0
Group III.			
,,	9	2	2†
Group IV.			
1916–18	10	1 (phthisis).	0
Palliative.			
,,	3	0	0
Totals	52	4 (7·7%)	2 (3·8%)

* 6 of these 11 cases died within a week of admission.

† (1) Case died within three days of admission, probably due to too sudden change of diet; (2) case had uræmia and diabetic coma.

‡ Two cases have been reported as having died since leaving hospital, one of these (in Group II.) of coma.

Table I. shows that the mortality in hospital was 23 per cent. in ten years before 1916, and was 17 per cent. in Pavy's cases, 1883–1888. Compared with these figures, the mortality in hospital was only 7·7 per cent. in cases treated by fasting since 1916. By palliative treatment is meant that no attempt was made to get the patient sugar-free. The acidosis was treated alone.

It is, perhaps, a truism to state a well-known clinical fact that most diabetics, and at any rate all of the severer type

benefit by being kept sugar-free. Judged by this standard, the treatment by fasting is a great improvement on the carbohydrate-free and protein-rich diets of previous years. Table II. shows the comparative infrequency with which the ordinary hospital case was made sugar-free for even a single day by the older methods of treatment. It is under 10 per cent., and of these cases only one out of 41 cases became sugar-free for any length of time.

The cases treated by fasting have been divided into four groups.

Group I. includes those cases who became sugar-free and remained so, and, further, they developed such a tolerance that it was expected that with reasonable care they would remain sugar-free after leaving hospital.

TABLE II.—*Diabetics treated in the Medical Wards—(A) during 1914, 1915, 1916, by Older Methods; (B) during 1916, 1917, and early in 1918, by Fasting.*

(A) By Older Methods.			(B) By Fasting.		
Year.	No. of cases.	Cases made sugar-free.	—	No. of cases.	Cases made sugar-free.
1914 ...	19	1*	Group I. ...	18	18§
1915 ...	15	2†	,, II. ...	12	12‖
1916 ...	7	1‡	,, III. ...	9	3¶
			,, IV. ...	10	3**
—	41	4 (9·8%)	—	49	36 (73·5%)
	Dr. Pavy's cases.				
1883–88 ...	53	4 (7·5%)	Septic wards	7	7

* Two months' history; 9 days free out of 20 strict diabetic diet. † (1) 2 years; mild case, sugar-free all the time in hospital, 41 days; (2) 5 months; sugar-free or only a trace 22 days out of 77. ‡ 1 week; 12 days free out of 123. § Sugar-free indefinitely; tolerance, max. 104 g., min. 21 g. ‖ Sugar-free while in hospital; tolerance, max. 20 g., min. 0. ¶ Unsuccessful cases: (1) Sugar-free sometimes; (2) sugar-free 2 days out of 19; (3) sugar-free 17 days out of 96. ** Refused treatment.

In Group II. the tolerance was lower, and it was felt that they would be unable to keep sugar-free after leaving. There is little doubt that if the patient had been well-to-do many of them would have been classified in Group I. The main expense in the after-treatment is in the provision of a sufficient variety of vegetables all the year round.

Group III. contains 9 cases who were treated unsuccessfully, and 3 of these cases were sugar-free sometimes. In all the 9 the sugar was much reduced by fasting, but it was found impossible to keep them sugar-free for any length of time. Some of the patients could not stand the fasting or the low diet for a sufficiently long period. There was no evidence that these cases took forbidden food surreptitiously.

Group IV. (10 cases) comprises all those who refuse treatment altogether, or who were discovered taking extra food, or who were believed with good reason to be so doing.

Taking all 49 cases together, 36 were sugar-free at some time or other—i.e., 73·5 per cent.—and 30 of these were sugar-free for long periods at a time. In addition, there were 7 cases in the septic wards, all of whom became sugar-free for varying periods.

TABLE III.—*Length of History and Carbohydrate Tolerance.*

Cases in—	Length of history.		
	Up to 3 mos.	3 mos.–1 year.	Over 1 year.
Group I. (sugar-free indefinitely)	9	5	3
Group II. (sugar-free temporarily)	2	6	3
Group III. (unsuccessful)	1	3	3
Average tolerance in grammes carbohydrate as a result of treatment	47·3	23·3	18·8

In Table III. the success of the treatment is correlated with the length of the history, in such cases as the data are available. It is obvious from this Table that the earlier the treatment is started the more successful will it be. In fact, if the case is treated within three months of onset there is a 75 per cent. chance that the patient will be rendered sugar-free indefinitely. The average tolerance obtained is also higher when the treatment has been carried out soon after the beginning of the disease (see line four of the Table).

It cannot be said from these cases that there is any noteworthy difference between the sexes in their power to react favourably to the treatment, or in the carbohydrate tolerance obtained. Some of the most brilliant successes are obtained in the treatment of the septic complications of diabetes by fasting. This was pointed out originally by Guelpa. Our experience has borne this out fully, but our cases are too few for statistical treatment.

The experience gained from these cases may be summarised as follows: The treatment by fasting and the subsequent addition of food in small quantities is by far the most successful way of treating diabetes; further, there is evidence that the life of the patient is prolonged. The advantages are that the patient is rapidly made sugar-free and that it does not take many days to tell whether the treatment will be successful or not. No medicines or diabetic foods are required. The patient can be taught to test his own urine, and definite rules can be laid down by which he can regulate his diet for himself. The treatment is not a cure for diabetes. The tolerance for carbohydrate in a severe case does not increase with the treatment; in fact, it may diminish in spite of it if the disease spontaneously progresses.

CAUSE OF SUCCESS IN TREATMENT.

It is naturally rather difficult to consider the cause of the success of the fasting treatment in diabetes when no finality has been reached on the cause of diabetes itself. The popular view at present is that the tissues of the body have to a large extent lost the power of utilising sugar, and that the hyperglycæmia is a secondary result. This view is strongly supported by Starling and Lovatt Evans's work,[3] and it will be the one adopted in this lecture.

Disappearance of the Glycosuria.

There are two results of the fasting treatment to be considered. One of them need not take long. It is the reason why the glycosuria disappears.

It is a well-recognised fact that the metabolism during the first day or two of starvation is different from that in the later period. This difference is due to a store of carbohydrate in the liver and elsewhere, and it shows itself in the smaller metabolism of protein on the first one or two days and in the absence of acidosis. This protein breakdown at first increases, reaches a maximum, and then gradually diminishes.

The explanation is that the carbohydrate store is largely used up at the beginning of the starvation period, and so there is not such a drain on the body proteins to begin with.

It must be imagined that in many cases of diabetes, by cutting off food, the main source of glycosuria is suddenly stopped and that the body succeeds in utilising most of the sugar remaining in the body, so that there is comparatively little left to pass out in the urine. There seems to be no doubt that the blood-sugar is definitely diminished by fasting, though in many cases the glycosuria stops, while the blood-sugar is still at an abnormally high level—cases which show the high leak-point described by Graham.[4] Where most of the sugar comes from protein—i.e., in the most serious types of disease—it is natural to expect that the glycosuria will only disappear after several days' fasting at a time when the carbohydrate store has already disappeared and the body proteins are themselves being utilised more economically.

Effect on Acidosis.

The second problem connected with fasting is its effect on acidosis.

The best definition of acidosis is that of Barcroft[5]: "It signifies the appearance of acids (exclusive of CO_2), abnormal in kind, or perhaps only in quantity, in the blood; or even a decrease in the bases present—in other words, an increase of acid relative to basic radicles in the blood. CO_2 not being considered." This is a wide definition and embraces the acidosis due to lactic acid and the acidosis of uræmic states, as well as the acidosis due to aceto-acetic and β-oxybutyric acids.

In clinical medicine the wide sense in which this term is used leads to confusion, as the term was originally intended to describe the presence of the acetone bodies in the blood. It will be better to discard entirely the use of the term, as applied to the acetone bodies in particular. A new and simple word has been suggested to denote the presence of these substances in the blood, and this is the word *ketosis*, which will be used throughout these lectures. *Ketosis*, then, is only one variety of those many different conditions that can be summed up conveniently in the word *acidosis*.

Stillman[6] has published results showing the effect of fasting on 22 diabetics.

He used Van Slykes's new method of measuring the so-called "alkali reserve" of the plasma. Oxalated plasma is subjected to an atmosphere containing 5·5 per cent. CO_2 in a saturator, and after saturation at 20° C. the amount of CO_2 in the plasma is determined by Van Slykes's apparatus, a modified form of blood-gas pump. Under these conditions the normal variation for the plasma of normal people is from 53 to 73 vols. per cent. of CO_2. When appreciable quantities of acid accumulate in the circulation much lower values for the plasma CO_2 are obtained. Hence this method gives a measure of acidosis.

Stillman found that his diabetics fell into four groups in regard to their behaviour towards fasting. (Table IV.)

TABLE IV.—*Effect of Fasting on Diabetic Acidosis (22 Cases).*

	Cases.	
Group I.	10	Normal alkali reserve throughout treatment.
Group II.	2	At beginning, low alkali reserve. Recovery with treatment.
Group III.	8	Subnormal alkali reserve throughout treatment.
Group IV.	2	Development of severe acidosis with low alkali reserve. Danger of coma.

Rothera's nitro-prusside test for acetone and aceto-acetic acid is much the most sensitive test for ketosis, and in all cases of fasting it will be positive; but it does not follow that acids will be present in sufficient quantity to alter appreciably the CO_2 content of the blood. If the

alkali reserve is unaltered by fasting, the case will fall into Group I., but Rothera's reaction will be positive all the same.

To a certain extent Stillman's classification depends on the previous treatment of the patient. For instance, there is no reason that Group II. should exist at all if every case of diabetes had the treatment suited to his needs. However, it is in just this group that the fasting treatment has gained its biggest reputation. It is the right remedy for a case whose ketosis has been artificially increased by a high protein and fat diet—a case made more severe by the hand of man. The case W. H. R. described by Hurtley[2] is a good example. The problem to be solved is the means whereby this diminution in ketosis is brought about.

SOURCE OF THE ACIDS.

It is now generally accepted that aceto-acetic and β-oxybutyric acid arise from fat. There are two independent proofs of this fact.

In the first place the output of these acids, when it occurs, is increased by giving extra fat in the food. Hurtley,[3] in his review, complains that the experiments usually cited in this connexion are unsatisfactory. However, some recent careful experiments by Lang[9] on himself are absolutely conclusive that ketosis is increased by feeding fat. The subject fasted for three days, on three occasions, after a high carbohydrate diet, a high protein diet, and a high fat diet; on the second day of the fast 0·029, 0·078, and 0·259 g. of total acetone were excreted.

The second proof was given first of all by Magnus Levy. In a case of diabetes, on a carbohydrate-free diet, the ketosis was so high that even if all the carbon from the protein metabolised had been converted into these two acids it would not have sufficed. Therefore some of this must have been formed from fat.

Other indications of this same fact are found in perfusion experiments and in the oxidation in vitro of fatty acids by hydrogen peroxide to form aceto-acetic acid and acetone.

There is no absolute proof that these two acids are formed from protein.

In fact, Lang's results point to protein in the food having a definitely inhibitory action on their formation similar to carbohydrate, only not so marked. The possibility that they may be formed from protein lies in the fact that certain amino acids that arise from the protein molecule are rather closely related to these substances and may be converted into them. The amount arising in this way must, in any case, be very small, and from the present point of view may be neglected. The same argument applies, only in a greater degree, to a possible formation of these bodies from carbohydrate. The final result is that for all practical purposes these bodies are formed from fat only.

FORMATION OF THE ACIDS FROM FAT.

The means whereby these acids are formed from fat, and the explanation of why they are formed to any large extent only when carbohydrate is not available in the organism, such as in starvation, in severe diabetes, and in protein and fat feeding, have led to much discussion.

Rosenfeld's hypothesis that fats burn in the fire of carbohydrate and only smoulder with the production of these noxious products when carbohydrate is absent is too picturesque to be convincing, and on examining it more closely is found to be meaningless.

Ringer[11] found that various substances with the aldehyde grouping –CHO could prevent the formation of ketosis, and he suggested that normally double compounds were formed between β-oxybutyric acid which he looked on as a normal intermediate product of fat metabolism, and the carbohydrate molecule; when carbohydrate was not available these compounds could not be formed and so β-oxybutyric acid was excreted. These substances are, of course, entirely hypothetical.

Hurtley's view[3] has the advantage of avoiding any theoretical chemical compounds. It is that acsto acetic acid is formed under normal conditions, but that it is almost entirely katabolised—all but the merest trace which appears in the urine. When the normal person is deprived of carbohydrate, after his store is used up, he uses more protein and fat, and therefore produces more aceto-acetic acid than he does on ordinary diet, and as this acid is difficult to katabolise, it appears in the urine. In the diabetic, oxidation of sugar is so slow that there is a similar call on protein and fat, with a similar result—the formation of aceto-acetic acid.

The criticism I should like to put forward with respect to this view is that the normal person metabolises both fat and protein in large quantity, as is shown, among other things, by the respiratory quotient being about 0·82; there need not be very much increase in this metabolism after carbohydrate is withdrawn from the diet. The amount of sugar that is sufficient to diminish the ketosis very considerably is much too small (i.e., 30 g. in Lang's experiments) to have any decided effect on diminishing the protein and fat metabolism. There must be some qualitative difference in the protein and fat metabolism when ketosis occurs.

I venture to put forward another suggestion; its chief merit, in my opinion, will appear later. The main point in the suggestion is by no means new.

Under normal circumstances carbohydrate, protein, and fat are each metabolised directly in various amounts, which can be calculated from the respiratory quotient. When the available store of carbohydrate is used up, as in starvation, carbohydrate is formed again, partly from protein and partly from fat. The formation of carbohydrate from fat, which is always supposed to occur when carbohydrate is missing from the diet or is not available as in diabetes, is necessarily accompanied by the formation of aceto-acetic acid; probably this is one of the intermediate stages, the fat molecule being oxidised so as to form Collis's multiple ketene groupings or being attacked in the β position.[3] No doubt in diabetes much of the sugar that is formed from fat is itself excreted unchanged, but the rest is oxidised. The main point of the theory is that there is a call for carbohydrate on the part of the organism and this comes from fat, with the simultaneous formation of acid bodies, when no carbohydrate is available.

This view is supported by certain conditions associated with the production of ketosis.

The first cases to be considered are the physiological states of starvation and protein fat feeding. Graham and Poulton[12] showed that there was a marked increase in ketosis when the non-nitrogenous metabolism was increased. The diet consisted of protein and fat, and contained 12·27 g. nitrogen, and had a calorie value of just under 2000. There was a steady loss of weight. The increased metabolism was produced by a steam bath on the ninth day; the rectal temperature was raised to over 102·2° F. for 2½ hours, and to over 103° for 2 hours, the highest temperature reached being 103·4°. Under these conditions Sutton has shown that there is an increase in the respiratory exchange.

The output of aceto-acetic and β-oxybutyric acids was 3½ times as great on the day of the bath as it was on the day before or after. Under the present hypothesis it would be natural to expect that an increased metabolism would call for a larger conversion of fat into carbohydrate, with an increased ketosis.

It sometimes happens that when ketosis is continued for a long time it tends to diminish, even when the diet remains the same ([12] p. 103). A possible explanation is that after a time the body gets used to doing without carbohydrate, and so less fat is converted, and the ketosis falls. However, this is not always the case.

In Benedict's case L., who starved for 31 days, the β-oxybutyric acid gradually increased for the first half of the time and then remained constant.

Lang's observation that feeding protein diminishes ketosis to some extent is explained by the carbohydrate part of the protein molecule being set free, and so lessening the call for fat conversion. The immediate effect of fat in diminishing ketosis temporarily ([9], p. 469), is to be explained on somewhat similar lines—i.e., that more fat is directly oxidised, so that less carbohydrate is required.

OBJECTIONS TO THE THEORY.

It is, however, in diabetes that this hypothesis is of most value. It may be said at once that the formation of sugar from fat in diabetes is a much debated point. The present attitude of American workers is absolutely opposed to it. They believe that all the sugar is derived from protein or carbohydrate.

One of the main objections raised to the theory of sugar formation from fat is that feeding fat in diabetes does not increase the sugar output. However, this statement is not by any means inevitably true. Joslin has pointed out ([4] p. 277) that the addition of fat to a diet upon which a severe diabetic is sugar-free, can be followed by sugar in the urine. In the three instances he quotes the ketosis is found to increase at the same time, which agrees with the present theory.

The main argument against the view of the conversion of fat into carbohydrate is provided by the D to N ratio.

Minkowski[13] showed that depancreatised dogs, whether fasting or fed with meat, showed a constant elimination of 2·8 g. dextrose for each gramme nitrogen. The lowest ratio was 2·62, and the highest 3·05. The constant value of this ratio in different animals suggested that all the sugar came from protein, and that 45 per cent. of the protein molecule was converted into dextrose.

Stiles and Lusk found a higher ratio, when feeding phosphorised dogs with meat—viz., 3·65, and Lusk found a similar ratio in human diabetes mellitus. He concluded that 60 per cent. of the protein could be converted into sugar, and he called this the "fatal ratio." However, cases have been described with ratios higher than this, which have recovered. Other cases have presented ratios of 8 and higher, which means that even if all the carbon from the protein molecule were converted into sugar it would still not suffice to account for the sugar excreted. It is true that Umber[14] has suggested that some of the nitrogen might be temporarily retained in the body, and so a false idea from these high D/N ratios might be obtained, but this will hardly account for the discrepancy.

It is well known that plants have the power of converting fat into carbohydrates, so that there can be no difficulty on the score of the very different chemical constitution of these two classes of foodstuffs.

Finally, Pembrey's experiments[15] on hibernating animals are absolutely conclusive as to the power of the animal body to make this conversion.

His respiration experiments when the animal was lying quietly at rest gave a respiratory quotient too low for any other hypothesis to be possible. The objection has been raised that he determined the oxygen, indirectly, from the known weight of the CO_2 and moisture given off. The experiments were carried out before modern improvements had made it comparatively easy to weigh the oxygen directly. It would no doubt have made a prettier experiment if this had been done. Still, the conclusions cannot be invalidated on this score; the differences are too big for any experimental error due to this cause.

THE RESPIRATORY METABOLISM IN FASTING.

Geyelin and Du Bois[16] and Allen and Du Bois[17] have shown that, as a result of fasting in diabetes—

There is a rise in the respiratory quotient. This is accompanied by (1) lessening of acidosis, as shown by the fall in β-oxybutyric acid excretion and the rise in blood CO_2; (2) diminution in the respiratory exchange; (3) lessened sugar and nitrogen output; and (4) lowering of the D/N ratio.

Unless it is assumed that fat was being converted into sugar, there is no satisfactory explanation of these facts, because the high D/N ratio of 4·01, obtained by Geyelin and Du Bois when the ketosis was greatest, would mean that the maximum quantity of sugar was being formed from protein and excreted, and yet the result of fasting was to cause a rise in the R.Q. This could only be due to (1) a special store of carbohydrate in the body which was now being utilised, a most improbable assumption; or (2) oxidation of the acetone bodies. However, Allen and Du Bois calculate in another case, Gerald S., that at least 400 g. would be required to account for the

observed rise in R.Q., and it would be impossible for such a large retention of acetone bodies to have taken place.

With the assumption that fat is converted into sugar the difficulty vanishes. A high ketosis with a low R.Q. means that besides fat metabolism there is some normal carbohydrate metabolism also occurring, and at the same time conversion of fat into sugar. There is no need to assume that the body has completely lost the power of utilising sugar, a difficult assumption, when tolerance for carbohydrate is afterwards regained. The result of fasting is to lessen metabolism; there is, on this account, less call for carbohydrate from fat, the associated ketosis diminishes, and the respiratory quotient rises.

The attempt has been made to explain the fall in ketosis that occurs in many cases of fasting by diminished respiratory metabolism.

This explanation is all the more probable when the type of case is considered that most benefits by the treatment. It is the case which has very severe ketosis due to feeding the patient on a high protein and fat diet. Benedict and Joslin[18] showed that this severe type of case had a higher respiratory exchange than normal. It is reasonable to suppose that the suddenly diminished metabolism produced by fasting is responsible for the beneficial effect.

The problem why the respiratory exchange diminishes under these conditions may be considered shortly. Rubner ([13] p. 42) showed that if protein or fat were given to a fasting dog there was a rise in the respiratory exchange, much too great to be accounted for merely by the increased activity of the alimentary canal. He called this effect the specific dynamic action of foodstuffs, and Lusk[19] has shown that in the case of protein this action is due to the direct stimulating action of certain amino-acids on the tissues. It is reasonable to suppose that the withdrawal of food causes a diminished metabolism by arresting its specific dynamic effect.

MUSCULAR WORK ON LOW DIET.

One remarkable feature of the treatment of diabetes by fasting and the subsequent addition of food in small quantities is that the patients seem to reach a point of equilibrium on a diet, the calorie value of which is much lower than that usually regarded as essential for a man taking active exercise.

One of my patients is a young man aged 27, whom I saw first three weeks after his diabetes began. After three weeks' treatment in hospital his carbohydrate tolerance was 32 g., and a year later it had risen to 60 g. The blood sugar was 0·144 per cent. on two occasions. For a year he lived on a diet with a calorie value of 1800–1900, and a protein content of 65 g. At first he led a sedentary life and his weight increased by 1 stone. He then took considerable exercise and lost 5 lb. Describing the exercise at the end of the year he says:—

"I have been outdoors nearly the whole of the time, taking exercise in some form or other, however slight, and doing as much as before I had the disease. I walk about five miles per day, and at the rate of about one mile per 17 minutes. I ride on horseback usually two days a week a distance of about ten miles on each day. I also as a rule go fishing every evening for about two hours, walking about a mile and a half and climbing fences, &c. On the whole, I should say that I take about the same amount of exercise as the average person does in the country not employed in manual labour."

All this was carried out on at most 1900 calories a day, with his body-weight 9 lb. higher than it had been at the end of his fasting treatment one year before, though some weight had been lost recently. On increasing the diet to 2000 calories he ceased to lose weight at all.

In view of this remarkable case Joffe, Ryffel, and I thought it would be worth while to investigate the metabolism in prolonged under-nutrition.

In particular we wished to find out if under these conditions there was any gain in efficiency during muscular work. We were able to do this through the kindness of Sir Alfred Fripp. The case was a man of middle age who had lived on a diet of uncooked vegetables, nuts, and fruit for some years. The full results are about to be published elsewhere.

The metabolism while lying at rest in bed was found to be at the rate of 1000–1100 calories in 24 hours and under 20 cal. per kg. per 24 hours. This is as low as Benedict[20] found in his subject, L., at the end of a 31 days' fast. The actual calorie output was calculated while the subject was walking about and engaged in his usual occupations. It was found to be 1500 per diem. On the other hand, it was found that there was no gain in efficiency when doing muscular work. The respiratory exchange was measured while the subject was walking at 3, 4, or 5 miles an hour and the calorie output per kilogrammeter of horizontal movement at the different rates was compared with that of Ryffel, a man of about the same physique as the subject. There was no perceptible difference.

The conclusion is that, while the actual muscular work is not carried on more economically on a low diet of long duration, the metabolism at rest is much diminished. This latter fact has also been shown recently by Loewy and Zuntz.[21]

It is possible for a healthy man to live a quiet life with a calorie output of only 1500 in a day if his diet is reduced to a low level. It is reasonable to conclude that patients with diabetes can also live on a diet of low caloric value and yet keep their weight constant, because their resting metabolism is permanently reduced, and it is this lowered metabolism that is the secret of the success obtained by the fasting treatment.

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(Continued at foot of next column.)

THE TREATMENT OF
SEVERE RELAPSING CASES OF MALARIA.

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AND

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THE routine treatment by oral quinine of all cases of malaria admitted to the medical division of a general hospital was found to be attended by a high incidence of relapses and the development, in a large proportion of the severe cases, of a progressive degree of cachexia. In order to test the efficacy of the intramuscular and, later, of the subcutaneous administration of quinine, successive groups of patients were treated by these methods. No appreciable lessening in the incidence of relapses resulted, but immediate and marked improvement in the general condition and nutrition of the patients invariably occurred from the more intensive forms of treatment, while the severity of the relapses became reduced and the duration of pyrexia less prolonged. At the suggestion of Sir Ronald Ross, K.C.B., another series of patients was divided, for quinine treatment, during the *apyrexic period*, into three groups: one-third received oral quinine gr. 20 daily; one-third quinine gr. 20 on Saturday and Sunday; the remaining third were given no quinine. The results of these various forms of treatment are summarised below. It is necessary to emphasise the fact that the cases treated by intramuscular and subcutaneous quinine courses were all examples of severe relapsing malaria, some being under treatment for six months before they were evacuated, having been observed continuously from the initial attack; cases admitted subsequently were much less severe.

The blood film examinations were made by Captain J. F. Taylor, R.A.M.C.

Routine Treatment by Oral Quinine.

The following is the routine originally adopted:—

On admission: Bed. Aperient if necessary—i.e., if not given within 24 hours prior to admission. Quinine gr. 20 by mouth. Blood film to laboratory for examination in special cases. No dietary extras.

Mild cases: (i.) *Apyrexic.* Q. gr. 20 by mouth daily in one or two doses, with iron tonic twice daily. (ii.) *Pyrexic.* Q. gr. 45 daily, reduced to gr. 30 when temperature normal for two days; later to gr. 20 daily in one or two doses, with iron tonic twice daily till discharged.

Severe cases: I.M.Q. gr. 20, repeated S.O.S.; subsequently by mouth gr. 45 daily; reduced to gr. 30 when temperature normal for two days, later to gr. 20 once daily, with iron tonic twice daily, till discharge.

The results of this treatment are shown in Table I.

TABLE I.

Analysis of 328 Cases Diagnosed Malaria under Observation 23/12/17.

Number under treatment with oral quinine	328
Number of relapsing cases under observation	98
Percentage of relapsing cases under treatment	30

Details of 91 relapsing cases.

Type.	No.	Averages.			
		Age.	Relapses observed.	Daily dose of quinine at time of relapse.	Period under observation (weeks).
M.T.	34	32	3	Gr. 25	7
B.T.	9	28	2½	,, 23	6
Neg., average } neg., B.F. ... }	32	27	2	,, 25	8
Clin. (no B.F.)...	16	31	2	,, 25	5½
Total	91	30	2½	,, 25	7

(Continued from preceding column.)

Bloch. Jour. (1915), ix., 456. 10. Magnus Levy: Arch. f. exp. Path. u. Pharm. (1901), xlv., 389. 11. Ringer: Jour. Biol. Chem. (1914), xvii., 107. 12. Graham and Poulton: Q.J.M. (1912), vi., 82. 13. See discussion in Lusk, Science of Nutrition, 1909, 275. 14. Von Noorden: Pathologie des Stoffwechsels. Berlin, 1907, ii., 33. 15. Pembrey: Jour. Physiol. (1903), xxix., 195. 16. Geyelin and Du Bois: Jour. Am. Med. Assoc. (1916), lxvi., 1532. 17. Allen and Du Bois: Arch. Int. Med. (1916), xvii., 1010. 18. Benedict and Joslin: Carnegie Institution of Washington Publications, No. 176. 19. Lusk: Jour. Biol. Chem., xx., 8. 20. Benedict: Carnegie Institution of Washington Publications, No. 203 (1915). 21. Loewy and Zuntz: Berl. klin. Woch. (1916), 825.

It was noted that the incidence of severe cases among patients who had previously suffered from dysentery was greater than in other patients, and in several cases there was a relapse of dysentery during or shortly after a malarial attack, dysentery organisms being isolated from the stools.

Effect of Single Daily Intramuscular Injections of Quinine.

This treatment materially improved the general condition of the patients, but as relapses were still very frequent (see Table II.) more intensive treatment was employed.

TABLE II.

Incidence of Relapses after a Course of Single Intra-muscular Injections (Average Number, 6) of Quinine Gr. 18 to 24.

Thirty-Four Successive Cases.

Type of Case.	Number of cases treated.	Number relapsing within four weeks.	Average period of relapse after cessation of course.
M.T.	20	14 ... 70%	Thirteenth day.
M.T. and B.T.	1	0 ... 0%	—
B.T.	2	1 ... 50%	Fourteenth day.
Neg. B.F., or clin.	11	4 ... 36%	Fifteenth day.
	34	19 ... 56%	Fourteenth day.

Intensive Treatment.

This consisted of a course of quinine, gr. 60 (intramuscular 20, oral 20, intramuscular 20), daily for four days, *repeated after 10 days.*

Symptoms and signs.—The symptoms and signs presented by 12 successive cases were as tabulated.

Symptoms and Signs Presented by 12 Successive Cases.

No.	Appearance.	Spleen. Prior to course.	Spleen. After course.	Symptoms and sensations. During course.	Symptoms and sensations. After course.
1	Anæmic.	2 in. below C.M.; tenderness.	Normal; no tenderness.	Headache, deaf (old trouble one ear), tinnitus.	Feels very well; previous symptoms gone.
2	Anæmia and cachexia marked.	1 in. below umbilicus; tenderness.	,,	Tinnitus, sweating, headache, nausea (not deaf).	Feels well; much better than before I.M.Q.
3	Anæmic. Skin pigmented "since being gassed."	Not felt, but marked tenderness on palpation.	A.Ax.L., 8th R., C.M.; no tenderness.	Vomited twice; slight headache, tinnitus, sweating.	Feels exceptionally well between courses of I.M.Q. and after.
4	Anæmic; sallow.	Felt; tenderness.	Not felt; dullness normal; no tenderness.	Headache, sweating, nausea, gradual rise of T. to 100°.	Feels well; previous symptoms gone.
5	Fair colour.	1 f.b. below C.M.; tenderness.	Not felt; dullness normal; no tenderness.	Headache, sweating, deafness.	Feels well; no symptoms.
6	Good colour.	Palpable; tenderness.	,,	Bad headache, nausea.	Feels very well.
7	Thin, cachectic, anæmic.	2 in. below C.M.	1 in. in front A.Ax.L., 1 in. below N., 3 in. below C.M.; tenderness.	"Felt ill." Headache, nausea; vomited; pain in back and L. side.	Much better.
8	Anæmic.	Palpable; tenderness.	A.Ax.L., 7th R., C.M.; tenderness.	Sweating, nausea, headache, tinnitus.	Very well.
9	—	Not palpable; tenderness.	Normal; no tenderness.	Tinnitus, slight deafness, and nausea.	,,
10	—	Palpable.	,,	Headache, deafness, nausea, tinnitus.	,,
11	Anæmic.	Enlarged; tenderness.	,,	Slight deafness, nausea, tinnitus.	,,
12	,,	Enlarged.	Normal.	Deafness, tinnitus, loss of appetite, headache.	Feels well.

R., rib. N., nipple. N.L., nipple line. C.M., costal margin. A.Ax.L., anterior axillary line.

Pyrexia.—Several types of pyrexic reaction were observed as a result of the intensive course. (See Figs. 1–5.)

Subsequent Effect of Intensive Treatment.

General Condition.—Improvement in the general condition was immediate, progressive, and marked. The appetite improved; cachexia disappeared; the patient put on flesh and gained strength rapidly.

Pyrexia.—The pyrexia was completely controlled in practically all cases for a period of two or three weeks, when relapses occur in 44 per cent. of the cases. (See Table III.)

TABLE III.

Incidence of Relapses after an Intensive Course of Quinine, Grains 60 Daily (I.M.Q. 20, O.Q. 20, I.M.Q. 20), for Four Days, Repeated after Ten Days' Interval, no other Quinine being Given (except in Three Cases, all of which Relapsed) after the First Course Ceased.

90 Successive Cases.

Type.	Number of cases treated.	Number relapsing within four weeks.*	Average period of relapse after cessation of 2nd course.
M.T.	38	20 = 52%	Fifteenth day.
M.T. and B.T.	4	3 = 75%	Twentieth day.
B.T.	28	13 = 46%	Nineteenth day.
Clin. or neg.	11	Nil = 0%	--
		36 = 44%	
Single Course (2nd course not given because of marked improvement).			
M.T.	7	No relapses.	
B.T.	2		
	90		

* A few cases were observed for less than four weeks after 2nd course.

The relapses occurring after two intensive courses were, however, as a rule considerably less severe, and were accompanied by less constitutional disturbance, the patients appearing to offer an increased resistance to the attack. In certain cases, previously the subjects of frequent and severe relapses, no relapse occurred till they passed from observation five or six weeks later, the improvement resulting from intensive quinine treatment in these cases being most satisfactory.

A few patients presented an intolerance to big doses of quinine, in one patient the effect of even one intramuscular injection of 20 gr., was to induce a state similar to that of anaphylaxis. In three very cachectic patients such marked constitutional disturbance resulted (complete loss of appetite, depression, greatly increased pulse-rate, associated with increased pyrexia) that the complete course was not given.

Technique of Intramuscular Injection of Quinine, with a Note of the Local Reactions.

A certain degree of local reaction which gave a little trouble having resulted from the earlier injections given in this series of cases, it may be useful to add a few remarks on the subject of technique in intramuscular injections, and especially to indicate the method which ultimately gave uniformly satisfactory results.

Practically all the injections were given in the gluteal region and the reaction referred to consisted in varying degrees of redness, tenderness, and induration of the tissues at and around the site of injection, together with a sometimes marked degree of œdema occurring chiefly over the sacrum, but in some instances being traceable as far upwards as the twelfth dorsal vertebra.

These phenomena were discovered in several cases simultaneously at the conclusion of the first intensive course.

The urine was once examined in each instance and found to be free from albumin, and treatment consisted in the frequent application of lead lotion; in the more pronounced cases the patients were kept in the prone position as much as possible to avoid unnecessary pressure.

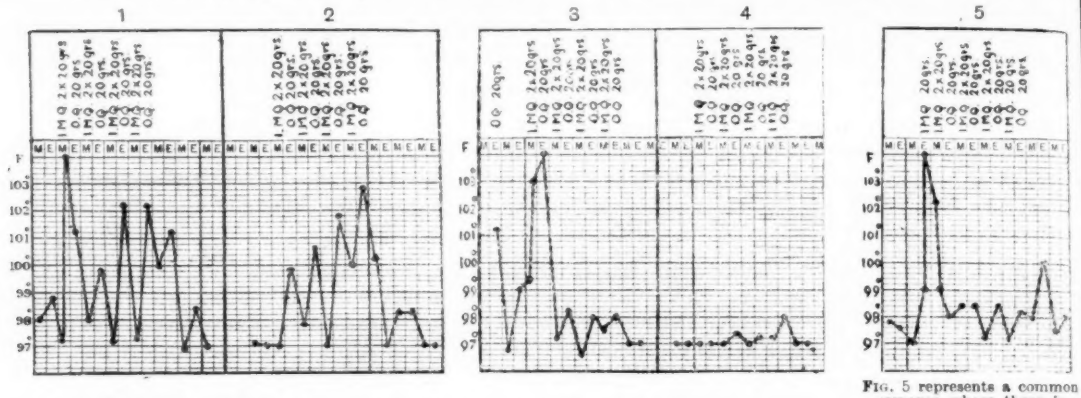
In 24 hours there was in all cases a distinct improvement, and in 3–4 days the condition cleared up except for a little local hardness which also gradually disappeared in the course of a further 7 or 8 days.

The opinion was formed that this condition was of the nature of an aseptic reaction to a chemical irritant and whereas the series of injections producing this result had all been given in a narrow zone 1½ in. to 2 in. below the iliac crest, it was decided to utilise in the next course more of the available area of muscular tissue. It was also thought that the sacral and lumbar œdema was to be explained by the fact that the injections had been made into a comparatively thin layer of muscular tissue closely shut in by bone, fascia lata, and the attachment of the latter to the crest of the ilium. It was therefore satisfactory to find that the next course of injections spread over a considerably larger area in the same patients was attended only by a slight degree of local reaction.

In the earlier cases the method of sterilisation of needles and syringes was that of boiling in water, but the needles quickly became blunt and their surfaces rough and eroded and occasionally a syringe cracked.

Other procedures were therefore tried, and the method finally adopted was that of boiling the needles in olive oil, in which they were also continuously kept; boiled water was passed through each needle with the syringe immediately after use and at the conclusion of each series of injections the needles were returned to the oil in the little dish, in which they were then boiled and kept. The syringe was not boiled, but kept in a solution of methylated spirit, ether, and lysol. Before use boiled water was passed through it three or four times to remove all traces of the antiseptic, and this was repeated before returning it to the lotion at the conclusion of the injections.

Charts Showing Types of Pyrexic Reaction Observed as a Result of Intensive Treatment.



FIGS. 1 and 2 represent respectively the response to the first and second courses in a patient with marked constitutional disturbance from malaria (cachexia, considerable visceral enlargement liver and spleen).

FIGS. 3 and 4 represent similarly the response in a patient with less marked constitutional signs of malaria.

FIG. 5 represents a common response where there is a pyrexic rise subsequent to the cessation of the course, during which there has been little or no pyrexia.

The area within which the injections may safely be given may be indicated as being bounded above by a curved line 1½ inches below the iliac crest, thus avoiding the superior and middle gluteal vessels; below by a horizontal line passing through the anterior superior spine of the ilium; in front by a line drawn vertically upwards from the trochanter and posteriorly by a prolongation downwards of the curved line marking the upper limit of the space.

It was found that the injections given farther forward than is here indicated were sometimes attended by some hæmorrhage from the puncture and in one or two cases by pain, numbness, and tingling, for a little distance over the outer and anterior aspect of the upper part of the thigh. The lower boundary excludes the possibility of damage to the great sciatic nerve. The patient should lie on his side with thighs drawn up at right angles with the trunk and in a comfortable position to obtain complete relaxation of his glutei.

In preparing the skin with iodine it is well to have a fairly large surface painted in order that, before introducing the needle, the operator may be at liberty to palpate the part and thus detect and avoid any little areas of temporary tenderness or induration resulting from previous injections. On withdrawing the needle a little wool and collodion is applied.

Other sites for injection were tried in some cases during the trouble with the first series, including the erector spinæ, deltoid, latissimus dorsi below the angle of the scapula, the infraspinatus and supraspinatus, the pectoralis, and the vastus externus muscles. All were much more painful than the glutei. In using any chest muscles great care must be taken to give the injection immediately over a rib in order to avoid puncturing the pleura, especially in a thin subject.

The vastus externus, though a rather painful site, seems to be otherwise a good one, the injection being given over the bone in about the middle third of the outer surface of the thigh where no nerves or vessels are liable to injury. The perforation of the fascia lata can be quite distinctly felt at an appreciable depth from the surface, and is useful in ensuring the solution being introduced into the muscle and not into the subcutaneous tissue.

Local Reaction.

A varying degree of local reaction results and consists of a localised induration of the tissues around the site of injection, varying in size from ½ in. to 1½ in. in diameter and usually painful and tender, but not sufficiently so to disturb sleep or prevent the patient from getting up at the end of the course and sitting and walking about the ward. Most of the patients made no complaint of it, and in the small proportion who did redness was generally found, together with rather more than the average extent of induration. To these lead lotion was applied for a day or two with rapid disappearance of redness and relief of tenderness.

Since this series of cases received two intensive courses and several three courses, involving 8 and 12 injections respectively in each buttock, it was interesting to note the condition of the parts at the time of discharge from hospital; this was done in several instances. In none was any wasting or swelling found; in 2 or 3 cases 3 or 4 little insensitive nodules about the size of a pea were the only abnormality detected; in every case the patient denied having any pain in walking, sitting, or bending, and noticed only a certain degree of numbness; no abscess formation occurred.

The solution employed was one of quinine bihydrochloride containing gr. 20 in 3 c.cm., and was put up in the hospital dispensary in small bottles, then sterilised in the autoclave, covered with a rubber cap and sealed with paraffin wax; the syringe was filled by passing the needle through the rubber cap.

In conclusion, it may be remarked that the methods adopted are the outcome of an experience of considerably more than 2000 intramuscular injections of quinine in the treatment of malaria.

Subcutaneous Quinine.

It was decided to treat a group of patients who relapsed after two intensive courses by larger daily doses of quinine for a shorter period, the following course being adopted:—

Oral quinine, gr. 20; subcutaneous Q., gr. 20 (in normal saline, ½ pint); I.M.Q., gr. 20; sub.-cut. Q., gr. 20; *total quinine gr. 80, daily*, the course being repeated the following day.

Relapses.—The incidence of relapses on this treatment within three weeks was 73 per cent., the cases treated by this method, however, being amongst the worst of the previous series. (See Table IV.)

TABLE IV.

Incidence of Relapses after a Course of Quinine Gr. 80 in 24 Hours.

Subcutaneous gr. 20	Subcutaneous gr. 20	}	Repeated the
Intramuscular ,, 20	Oral... ... ... ,, 20	}	following day.

Total quinine, gr. 160 in 36 hours. All these cases had previously relapsed after two intensive courses (gr. 60, daily, for four days).

Type of case.	Number of cases treated.	Number relapsing within three weeks. (No quinine given in the interval.)	Average period of relapse after course ceased.
M.T.	14	10	Fifteenth day.
B.T.	8	6	Seventeenth day.
Totals ...	22	16 = 73%	Sixteenth day.

The administration of quinine subcutaneously, as above described, proved to be unsatisfactory and was abandoned for the following reasons:—

1. It was impossible to deal with more than a small number of cases in one ward owing to the length of time taken to give the injection (½ to 1 hour).

2. Induration and nodule-formation occurred under the skin, not at the point of skin puncture, but at the point where the solution accumulated in the tissues; the nodule develops a few hours after the injection, is painful, increases in size; in three cases suppuration occurred, the pus, which, when aspirated, proved to be sterile, was completely absorbed without the skin breaking down.

The method of subcutaneous administration advocated by French writers is at present being practised, but sufficient cases have not yet been treated to justify an expression of opinion on this method.

Apyrexic Cases.

During the treatment by the special courses described above all other forms of quinine administration were suspended in that series of cases. A large number of new cases were, however, continually coming under observation, of which a considerable proportion were either apyrexic on admission or became so a day or two later. In order to test the efficacy of quinine in preventing relapses in these cases they were divided into three groups; in one-third no quinine was given; in one-third quinine, gr. 20, was given on Saturday and Sunday only; and in the remainder quinine,

gr. 20, was given daily, in one or two doses. The results obtained in 552 cases are as follows:—

TABLE V.

Incidence of Relapses in Apyrexic Cases Diagnosed Malaria Admitted to a General Hospital from 31/12/17 to 28/2/18.

Dose of quinine.	No. treated.	Discharged, no relapse.	Relapsed within 3 weeks.	Percentage of relapses.
No quinine	368	198	170	46
Gr. 20 Saturdays and Sundays	94	85	9	10
Gr. 20 daily	90	83	7	8
—	552	366	186	—

The high incidence of relapses when quinine is stopped immediately the patient becomes apyrexic is a distinct contra-indication for this procedure; on the other hand, it was found that the results of blood films taken at the time of relapse in such patients were almost invariably positive, whereas over 50 per cent. were negative in the case of patients relapsing during quinine treatment. In cases, therefore, where the diagnosis is in doubt positive findings will more readily be obtained if quinine is stopped, a procedure we now adopt in these cases. The relative merits of Saturday and Sunday and daily quinine are still under investigation.

Summary.

1. A considerable number of patients suffering from severe malaria—amounting in one series of 328 cases to 30 per cent. of the total number under treatment at one period—when treated by oral quinine continue to relapse, develop long periods of sustained pyrexia, or become increasingly cachectic.

2. A group of 90 successive patients of this type were treated by two intensive courses of quinine (intramuscular gr. 20, oral gr. 20, intramuscular gr. 20 daily for four days, the course being repeated 10 days later). The result of such treatment was an immediate, progressive, and marked improvement in the general condition in all cases. Relapses occurred in 44 per cent. of cases within four weeks, but were of considerably less severity than previously and were completely controlled by oral quinine.

3. Another series of 552 relapsing cases, less severe in type, were treated, during the *apyrexic* period, by three different methods:—

A. 368 were given no quinine; of these, 46% relapsed within 3 weeks.
B. 94 were given quinine gr. 20 on Saturdays and Sundays; of these, 10% ,, ,, ,,
C. 90 were given quinine gr. 20 daily; of these, 8% ,, ,, ,,

Conclusions.

1. Routine treatment by oral quinine is adequate in the majority of cases of relapsing malaria; it is necessary to continue the quinine treatment in doses of 20 gr. either daily or twice weekly during the patient's stay in hospital to obviate a high incidence of relapses.

2. In the cases (the minority) where oral quinine proves inadequate *intensive* treatment by one or more courses of combined oral and intramuscular quinine (gr. 60 daily for four days) is followed by such marked improvement as to justify the adoption of this treatment as a routine procedure for such cases, the chief indication for this course being progressive cachexia and visceral enlargement in a patient suffering from repeated relapses or prolonged pyrexia and not responding to oral quinine.

We wish to thank Lieutenant-Colonel A. G. Phear, R.A.M.C., consulting physician, at whose suggestion the intensive course was adopted, for much valued guidance and advice.

THE AMERICAN PEDIATRIC SOCIETY.—At the thirtieth annual meeting held at Lenox, Mass., from May 27th to 29th, the opening address was given by the President, Dr. L. E. La Fétra (New York), on The Neglected Period of Childhood. Among the papers read were: Standards for Growth in Children, by Dr. L. Emmett Holt (New York); Easy Calculation of Milk Mixtures, by Dr. J. P. Crozer Griffith (Philadelphia); Child Welfare Campaigns, by Dr. W. Palmer Lucas (San Francisco); The Massachusetts Child Conservation Committee, by Dr. R. M. Smith (Boston); Preliminary Report on Vegetable Milk, by Dr. H. D. Chapin and Dr. L. Rast (New York); and, by invitation, Medical Prophylactic Work in the French Army, by Dr. P. Armand De Lille.

ON THE CLINICAL ASPECTS OF TUBERCULOUS MESENTERIC GLANDS.[1]

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TUBERCULOSIS of the mesenteric glands has been but little discussed, and yet, in view of the difficulty of diagnosis and the seriousness of the complications which may supervene, a detailed description of the clinical aspects of the condition may not be without value.

Frequency.

The condition is probably much more common than is generally believed, the explanation of the apparent rarity being that unless complications occur the symptoms are so elusive, or rather point so indefinitely to any particular disorder, that they are classed under the general term of "indigestion," and no attempt at differential diagnosis is made. It is interesting to compare the opinions of two observers in this matter.

On the one hand, in a most interesting account of abdominal tuberculosis in young children,[1] Dr. Dingwall Fordyce, giving his experience of the frequency of mesenteric gland infection at the Royal Hospital for Sick Children, Edinburgh, says that it is extremely common, in the Edinburgh district at least. He examined the mesenteric glands in 50 consecutive post-mortems, finding bacilli present in 10 cases, and he reports MacFadyen and MacConkey,[2] who made inoculation experiments into guinea-pigs of the mesenteric glands in 28 cases, 20 of whom died of non-tuberculous causes, all children under 8 years of age, and found virulent bacilli in 10 cases, 5 of which died of non-tuberculous affections.

On the other hand, Goodhart and Still[3] say that although 59 per cent. of all tuberculous post-mortems showed tuberculosis of the mesenteric glands, only 46 cases were diagnosed clinically in 6000–7000 patients, and half of these were doubtful. Probably this small proportion of diagnoses is due to the fact that the typical symptoms of the disease are little known and there are not often any very obvious physical signs.

For the purposes of this paper I have analysed 50 consecutive cases submitted to operation for this disease (excluding cases of general tuberculous peritonitis) over a period of about eight years.

Origin of the Infection.

The question whether these glands are primarily affected with tubercle cannot be answered except by comparative reasoning. We are agreed that in the region where tuberculous glands are commonest—namely, the neck, the infection reaches them through a breach in some neighbouring surface, whether it be of the throat, nose, ear, scalp, or teeth, and that before the tubercle bacillus can obtain a lodgment some pre-existing influence—e.g., sepsis, must have lowered the resisting power of the gland. That the method of incidence is the same in the mesenteric glands is highly probable.[4]

There are certain facts that lead to this conclusion: (*a*) the glands earliest affected are the para-intestinal glands, that is the group nearest to the intestine; and (*b*) the part of the mesentery where glands are the most common is the ileo-cæcal region, where the intestinal contents reach their highest degree of bacterial activity, and where irritative lesions, such as catarrh of the appendix or thread-worms in the cæcum, are not uncommon.

On the other hand, it may be argued (*a*) that it is rare to find in these cases any tuberculous lesion in the intestine, and (*b*) that it happens sometimes that the affected glands are higher up in the chain, forming masses around the upper part of the superior mesenteric artery. But it has been proved[5] that tubercle bacilli can pass through the intestinal wall without any discoverable lesion of the mucous membrane, and we often see distant glands affected in sepsis and cancer, while nearer glands are apparently untouched.

It is not unreasonable, then, to believe that the mesenteric glands, first rendered less resistant by a septic invasion from the intestinal canal, become infected later with tubercle from the same region.

There are two main sources of tubercle bacilli in the intestine: (1) swallowed sputum in cases of pulmonary tuberculosis; and (2) bacilli swallowed in food, especially milk. It is rare, however, to find pulmonary tuberculosis in these cases (only two in my series, and those aged 25 and 32), and it is probable that the inhalation of tubercle bacilli would, if it infected anything, infect either the lungs or, if absorbed from the throat or naso-pharynx, the cervical lymphatic glands.

If we believe that the infection comes from tuberculous milk the type of organism should be bovine, and that this is frequently the case is proved in the report of the Tuberculosis Commission.

Whatever the truth of the origin of the infection, there are two facts of importance upon which we can agree:

(1) Tuberculosis of the mesenteric glands can, and generally does, occur in patients in whom no other tuberculous focus can be found.

[1] An address delivered before the Medical Society of London.

(2) The glands affected are practically confined, unless the condition is very advanced, to the area of the mesentery containing the lymphatics which drain the lower end of the ileum and cæcum.

Course of the Disease.

The course of the disease is as follows:—

In the *first* stage it is usual to find a general enlargement of the para-intestinal glands over a wide area of the ileo-cæcal mesentery. The glands are firm or soft, almost translucent, and the serous covering is unchanged.

In the *second* stage caseation has taken place in a few of the glands which appear as smooth, soft masses of a yellow colour, and these glands may be found side by side with others still in the early stage, or they may be the only ones obviously affected. It is in this stage that complications commonly occur, due to the enlargement and breaking-down of the gland and the implication of the serous covering.

In the *third* stage calcification occurs, and, as a rule, only two or three glands are affected, the rest being apparently normal. These glands vary much in size, the largest being rarely bigger than a broad bean, while quite small ones may be completely calcified. They are densely hard, irregular in shape, and yellow in colour, and, as a rule, the serous covering is not adherent. It seems that in the course of the disease a process of degeneration of a few glands occurs simultaneously with resolution of the majority.

Age Incidence.

It is difficult to say at what age symptoms arise.

Many of my cases had had symptoms for two or three years, and the average is about seven months. I can only record here the age at which my patients came under my notice, and though it is evident that it is typically a disease of childhood it is worth noting that 11 of the cases were over 20 before I saw them. The youngest was 18 months old and the oldest 38 years.

Ages	1-5	5-10	10-15	15-20	20-25	25-30	Over 30
Cases... ...	8	14	15	2	4	5	2

Sex: Males 29. Females 21.

Family history: In only 4 cases was there a clear family history of tubercle.

Pulmonary tuberculosis: Two cases, aged 25 and 32, were affected.

Symptoms.

Duration.—30 cases gave a history varying in length from three years to two weeks, averaging seven-eight months. 14 cases were more or less acute with symptoms of less than one week, and in 6 cases the duration of symptoms was not stated.

In the 39 cases which I refer to as typical the symptoms were practically identical. These 39 cases are not all uncomplicated, 5 had an intestinal kink, 1 had general adhesions, 1 had an adherent Meckel's diverticulum, and 4 had free fluid, but these complications did not alter the typical clinical picture, though the fact that they occurred without additional symptoms has its effect on the question of treatment.

The patient is rather under-developed for his years, giving the impression that he is not gaining weight and strength normally. The parents say that he has never been strong, and that since the symptoms began he has decidedly gone back. He is anæmic, rather thin, and often listless in his manner. He does not play with other boys and often complains of feeling unwell.

The action of the bowels is not often affected; indeed, there is only one case in this series where diarrhœa was reported, and constipation though present in a few cases is not the rule. The appetite is poor and the tongue furred. Flatulence has been complained of in many instances. One patient had frequency of micturition. There have been only a few cases of small rise of temperature 99°-100° and the pulse is only quick when the child is in pain.

But the main symptom is *pain*, and its character is absolutely typical.

It is a sudden centralised abdominal pain severe enough to make the child cry, lasting for about 15 minutes or less, relieved by pressure and hot applications, recurring perhaps two or three times a day and stopping as suddenly as it began, so that in the intervals the patient is quite free. In some cases pains occur every day, in others only at intervals of a month or so, the attack lasting two or three days. Vomiting occurred at the time of the pain in 13 of the 39 typical cases.

I do not know of any other disease in which pain of this type occurs. I believe that it is absolutely diagnostic. What is the explanation of this pain.

I have seen only two explanations in the literature on the subject—Lund[6] saying that he considered it due to an acute infection complicating the glands which are already tuberculous, and Goodhart and Still[7] ascribing the pain to tuberculous peritonitis. I do not agree with their views, for tuberculous peritonitis was not present in any case of this series, the glands are not inflamed, the serous coat is not affected unless advanced caseation is present, while the typical pain occurs whether caseation has occurred or not.

In considering the type of pain one realises that it is a true "colic"—in other words a peristaltic pain such as occurs in the gall-bladder, common bile-duct, and ureter, and it is due to tonic contraction of unstriped muscle. Pain of this nature starts suddenly, ends suddenly, and is relieved by pressure and heat.

I believe that the gland stimulates the neighbouring branches of the vagus nerve proceeding to Auerbach's plexus and causes a tonic contraction of the circular muscle fibres of the small intestine, and that the pain is due to this cause.

At one time I thought that this contraction might be sometimes followed by a temporary intussusception, and that the pain was caused by this and increased by the pull of the mesentery on the affected gland. I was led to this idea because I had had three cases of intussusception early in my series, the starting-point being exactly opposite the affected glands, and because on an occasion when operating upon a case of tuberculous mesenteric glands I was fortunate enough to see the segment affected actually intussuscepted into the segment below twice in a minute or so, the intussusception being, of course, easily reduced, though I did not think it right to delay the operation to see if it would reduce itself. But I am not justified in drawing such a conclusion from so few instances to account for pain which we know can be caused by tonic contraction of unstriped muscle alone.

Examination of the abdomen rarely gives any definite signs.

It is quite unusual to be able to detect a *lump*—only three in my series, one of which was quite atypical, as he had no pain, and except for quite a large lump seemed in good health—and though the abdominal wall may give a dougny sensation to palpation, and there may be some points of tenderness, the signs are vague.

Free fluid is not present in diagnosable quantity, if at all—one only of my series—and there is rarely any flatulent distension or rigidity.

In a few cases I have been able to obtain X ray confirmation of the diagnosis, as a calcareous gland will throw a shadow—indeed, in two cases it led to a diagnosis of ureteric stone—but I think I have only once seen a vague shadow of a caseating mass.

Differential Diagnosis.

In the absence of complications there are but few conditions which give rise to similar symptoms.

A chronic appendicitis, of the variety known as appendicular colic, and ureteric stone are the most important, and in children dietetic indiscretion or the presence of thread-worms may give rise to transient symptoms which bear some resemblance. One of my cases was diagnosed as lead colic before admission.

1. Appendicitis.

Appendicitis in its chronic form has been found in 16 of my series, and, as I have suggested, it may in some cases be the cause of the original disturbance of the glands which predisposed them to tuberculous invasion. To give rise to similar symptoms the appendicitis must be of a chronic type in which the appendicular coats are thickened, the lumen narrowed, and the normal peristalsis consequently interfered with. In such a case occurring in a child there will be flatulence, loss of appetite, furred tongue, malaise, constipation, and abdominal pain.

The differential diagnosis is difficult, but in this type of appendicitis the attacks of pain will be less frequent and last longer, and may be localised; constipation is more the rule, and local tenderness is marked. There may also be a small rise of temperature, which is unusual during an attack of pain in mesenteric gland tuberculosis. Rectal examination, which is of great value in appendicitis in children, may settle the diagnosis.

2. Stone in the ureter.

In children the pain is unilateral, lasts longer, is generally accompanied by vomiting and very often by frequency of micturition. The fact that calcareous mesenteric glands cast a shadow with the X rays leads to confusion, and the passage of a ureteric sound may not be easy or advisable. Abnormalities of the urine and of micturition will be the best aid in differentiation. In my two cases where a mistaken diagnosis of ureteric stone was made, one, a boy, had hæmaturia due to urethritis which also prevented cystoscopy, and the other, a woman, had already been operated upon for renal and ureteric calculus on the other side.

3. Other conditions.

Digestive disorders.—Children are very liable to transient attacks of colicky abdominal pain, but these attacks are generally very severe while they last, relieved by vomiting and defæcation, and occur at comparatively long intervals. They have none of the typical chronicity of the symptoms of mesenteric gland tuberculosis.

Intestinal parasites.—The same applies to this condition which may give rise to quite severe abdominal symptoms. Thread-worms have been found in four cases in my series. The diagnosis can be made only by finding evidence in the stools.

Lead poisoning.—One case, admitted to hospital with this diagnosis, was a painter, aged 27, with a marked blue line.

Complications.

In this series of cases I have been careful to exclude any case which could be called primary tuberculous peritonitis.

Many of these cases, both serous and fibrino-caseous, have occurred in my practice during the period covered by this series in which the mesenteric glands were implicated, but these have been excluded because they may be instances of generalised systemic infection, while the cases in my series are, I believe, instances of localised infection.

It is impossible, however, entirely to avoid overlapping, and we find that a serous peritonitis was present in one case, a peritonitis clinically of recent origin with enlarged glands of some standing. There are two cases where adhesions were present apart from adhesions in the gland area, and six cases in which free fluid was present in small quantity. I do not suggest that these evidences of general peritoneal trouble were secondary to existing glandular infection. I do, however, wish to record my opinion that the last stage of tuberculous peritonitis, the so-called caseating form, is the last stage, not of tuberculous peritonitis, but of caseating mesenteric gland tuberculosis.

There are 16 cases of chronic appendicitis in my series; this is not, of course, a complication of the gland, but, as I have suggested, it may be the predisposing cause.

Intussusception.—Three cases are recorded, aged 4, 2½, and 1½. (Table I.)

TABLE I.—*Complications.*

Among those (39) with typical symptoms.

Adhesions	1	Frequent micturition	1
Adherent Meckel's diverticulum	1	Intestinal kink	5
Free fluid...	4	Palpable tumour	2

Among those (11) with atypical symptoms.

Free fluid	2	Palpable tumour without symptoms	1
Intussusception	3	Symptoms of intestinal obstruction (none found)	1
Obstruction, intestinal	3	Symptoms of intussusception (none found)	1
,, by Meckel's diverticulum	1		
Obstruction, subacute	1		

We know that the common age for intussusception is the second six months of life, and we are content to explain it on the grounds that in this period, when the breast-fed child, in whom it mostly occurs, is being weaned, the intestinal tract, in its attempt to adapt itself to new and strange foods, is liable to peristaltic vagaries. After the first year, intussusception occurs more rarely, and we look for some organic cause to account for the condition.

It is not unreasonable to believe that the glands, placed in such close relationship to the branches of the vagus nerve, may excite increased muscular contraction and thus lead to intussusception, for we know[8] that stimulation of any portion of the gut causes contraction above the point of stimulation and relaxation below, conditions which are necessary for intussusception.

I have mentioned the case where intussusception occurred while I was operating, and one of my cases had typical signs of intussusception, passage of blood and mucus with obstruction, but operation revealed no trace of this condition. It is not impossible that intussusception actually occurred and disengaged before operation.

Symptoms of intestinal obstruction, occurring in 7 cases, constitute a very serious complication, and accounted for 1 of the 3 deaths.

The obstruction may be caused in many ways: (1) a caseating gland placed near the gut causes implication of its serous covering with contraction drawing down the attached edge of the gut and kinking it; (2) the gut may be adherent to a gland in its own mesentery or in the mesentery of an adjacent coil, by its free edge or side; (3) a coil of gut may be closely adherent round a gland; (4) a Meckel's diverticulum may be adherent by its tip to a gland, obstructing the gut at its point of origin or strangling an adjacent coil; or (5) the omentum may be adherent to a gland, causing a band which may strangle the gut.

The typical symptoms of mesenteric gland tuberculosis are, of course, overwhelmed by the urgent signs of obstruction, and only a close inquiry into previous history will allow of a correct diagnosis of the causation of the obstruction. The obstruction may vary from a kink requiring no more than the removal of the gland and freeing the gut to a most serious condition involving a great length of gut and requiring an enterectomy.

These are the complications of tuberculous mesenteric glands as I have seen them apart from the late stage of tuberculous peritonitis, which may be attributable to them. I find, however, in the scanty literature a report by Chiari[9] of a case in which a caseating gland ruptured into the stomach.

Treatment.

Cases divide themselves easily into two groups—namely, cases with and without complications. I think we can agree that when complications arise, particularly in view of the fact that these complications are mainly included under the term "intestinal obstruction," operative interference is imperative. But there may be some difference of opinion in uncomplicated cases. It depends upon the view taken of causation.

If it is believed that the condition is part of a general tuberculous state, or that it is due to absorption of tubercle bacilli from the intestine, or, perhaps, as it has been suggested,[10] that they may be secondary to bronchial glands, a case might be made out for purely medical treatment.

If, on the other hand, we believe that these glands have had their resistance lowered by some preceding inflammation, the tuberculous infection being secondary, as is, I believe, agreed in cervical gland tuberculosis, it follows that we must find and remove the primary cause before we can hope to cure the disease, and, this done, a local removal of the diseased tissues will result in cure.

Another point to be decided is whether we can exclude complications in so-called "typical" cases. I have shown that in my cases with typical symptoms there were 16 cases complicated by appendicitis, and in 11 other cases there was some complication. Another point to be settled is whether, knowing that there is a tendency to spontaneous cure, cases can be treated on expectant lines. My own experience is entirely surgical, and I will give my own principles of treatment and the immediate results and the remote results as far as I can.

Uncomplicated Cases.

A routine examination is made in order that tuberculosis elsewhere, particularly in the lungs or in other glands, may be excluded, and then the nose, naso-pharynx, and mouth are examined. It is very important that any disorder in this region should be corrected, as rhinitis, rhino-pharyngitis, enlarged and septic tonsils, adenoids, and decayed teeth are common causes of intestinal irritation.

The stools are examined for signs of intestinal ulceration, and particularly for thread-worms. If there is constipation it is well to administer small doses of liquid paraffin for a few days before operation.

The abdomen is opened in the mid-line, below the umbilicus, and the mesentery is examined, beginning at the ileo-cæcal junction. Any caseating or calcareous glands are removed by dissection, and this may be a rather tedious operation, and, if the serous covering is affected, it may leave some big rents in the mesentery which must be repaired with fine catgut. I have not found that this has interfered with the blood-supply of the gut, but Jamieson and Dodson[11] give warning of the close relationship of the ileo-colic chain of glands to the ileo-colic artery and vein. It is essential that all the caseating glands are removed and it is much wiser to dissect them out than to curette them. The intestine is examined for ulcers or kinks, and other evidences of tuberculosis are looked for. The appendix is removed and the abdomen closed without drainage. Fine catgut is used throughout for peritoneal sutures.

Complicated Cases.

In complicated cases we are dealing with intestinal obstruction and the ordinary surgical principles apply.

Some cases are simple and require but the removal of the gland and the freeing of a kink, others may present difficulties which make success impossible. We are all aware of the frequency with which fæcal fistula follows operation in these cases, and we know how fatal such a sequela is. I have come to the conclusion that the formation of an artificial anus above the obstruction is useless, and that to get success we must either be able to free the gut from adhesions and remove the caseating glands or do a resection.

Any operation, such as a short circuit which leaves the glands, is sure to be a failure, and therefore it is better to do an enterectomy than a short circuit with removal of the glands superadded, both from the point of view of saving time and of permanent cure. I have been agreeably surprised by the success which has attended those cases in which I have removed the glands and freed adhesions, even though in doing so the serous coat of the bowel has been considerably injured. It is only, I think, when such an operation leaves the gut so injured that it is risky to return it to the abdomen that enterectomy should be done.

Three of my cases required enterectomy including one Meckel's diverticulum, 2 recovering, 1 dying. The second Meckel was treated by excising the diverticulum and the gland successfully. None of the intussusceptions required enterectomy, and though in one case the intussusception appeared at the anus all did well.

Results.

The *immediate* result was 47 recoveries and 3 deaths. (Table II.)

TABLE II.—*Summary.*

No.	Complications.	I.R.	After-results, 6 years-6 months.
	Non-caseating cases.		
16	Adhesions, 1 Free fluid, 1 Intussusception, 2	R. 15, D. 1	Quite well, 7 Occasional pain, 4 Died, 1. No reply, 3
	Caseating cases.		
26	Adherent M. Div., 1 Obstruction, 4 Free fluid, 5 ,, by M. Div., 1 Intestinal ulcer, 1 Phthisis pulm., 2 Intussusception, 1 Pleurisy, 1	R. 25, D. 1	Quite well, 12 Occasional pain, 5 Died, 1 No reply, 7
	Calcareous cases.		
6	Adhesions, 1	R. 5, D. 1	Quite well, 2 No reply, 3
	Not stated.		
2	—	R. 2	Quite well, 2

I.R., immediate results. M. Div., Meckel's diverticulum.

The cases that died were:—

1. A boy of 16 operated on Sept. 29th, 1910, with intestinal obstruction of a week's standing. At operation the intestine was found bound down to a caseating gland, and many ulcers were seen in the gut. Resection.

2. A girl of 5½, operated on March 25th, 1913; 6 days' history. All signs of obstruction, but none found at operation. Practically moribund when first seen.

3. A boy of 9 years, who had been ill for five days with a temperature ranging round 103°. There were no complications at operation, but he died of acetonæmia on the third day.

Late results.—I have corresponded with and seen or had reports from 33 of the 47 cases which recovered after operation.

Of these 7 were from the 14 complicated cases which recovered, and 26 from the 33 uncomplicated cases that recovered.

Of the 7 complicated cases 5 are quite well, 1 in which an extensive resection was done had a little flatulence and occasional pain 2 years later, and 1 after 6 years is making good progress, but has occasional set-backs.

Of the 26 uncomplicated cases 17 are quite well after periods varying from 3½ years to 6 months, 5 had occasional pain, 1 after 3 months still has pain, 1 developed pulmonary tuberculosis but after a stay in a sanatorium recovered and is now married and well, and 2 died, one 2½ years after operation, during which she was never free from pain, and committed suicide, and one developed general tuberculosis 11 months after operation.

So the record stands: Of 33 cases 22 are quite well, 8 are practically well, 2 have died without improvement, and 1 case has been too recently operated upon for after-history to be of value.

It may be of interest to compare the after-histories as affected by the stage of the disease. Thus of the 50 cases 16 were not caseating, 26 were caseating, 6 were calcareous, and in 2 cases the condition is not stated.

Of the 15 non-caseating cases which recovered 7 are quite well, 4 have occasional pain, 1 died of general tuberculosis, and 3 have not been traced.

Of the 25 caseating cases that recovered 12 are quite well, 5 have occasional pain, 1 died, and 7 have not been traced.

Of the 5 calcareous cases 2 are quite well and 3 have not been traced, while both the doubtful cases are quite well.

One would have expected that the non-caseating cases would have shown better after-histories than the caseating, but there is not much to choose.

Conclusions.

1. The mesenteric glands may be the only part of the body affected by tubercle, and especially they may be affected apart from tuberculous peritonitis.
2. There is a tendency to spontaneous recovery, as evidenced by calcification.
3. The condition is not limited to childhood.
4. A diagnosis can be made with reasonable certainty without the presence of a palpable tumour.
5. Pain is characteristic in type and is due to spasm of the affected segment of small intestine.
6. This spasm may give rise to intussusception.
7. Complications are frequent and may be serious.
8. The caseating form of tuberculous peritonitis is probably the last stage of caseating mesenteric glands.
9. Operative treatment should be undertaken owing to the difficulty of excluding complications in apparently "typical" cases, and such treatment gives a good prospect of permanent cure.

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THE SANATORIUM TREATMENT OF PULMONARY TUBERCULOSIS.

THE DISAPPEARANCE OF T.B. FROM THE SPUTUM.

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ALTHOUGH it is generally recognised that the disappearance of the specific organisms from the sputum of a patient suffering from pulmonary tuberculosis is of favourable import, the full significance of this occurrence, perhaps, is not so widely appreciated.

The after-history records of King Edward VII. Sanatorium are of much interest in this connexion. They show that patients who at the date of their discharge from the sanatorium have no sputum or sputum in which T.B. could not be demonstrated enjoy a substantially better prognosis than others, seemingly comparable in all respects, but in whose sputum T.B. are constantly present. Indeed, if in possession of the sputum records it is possible to no small extent to forecast the degree of permanent benefit likely to be associated with the work of the institution during any given period.

The proportion of cases in which disappearance of the bacilli may be expected to result from treatment in a sanatorium is therefore of more than academic interest.

Sputum Records of King Edward VII. Sanatorium.

The following contribution from King Edward VII. Sanatorium consists of the records, over a period of 11 consecutive years, of the number of cases in Groups 1, 2, and 3, as defined by the Turban-Gerhardt classification, which on admission had T.B. in the sputum, and the number and percentage of the same in which at the date of discharge T.B. could no longer thus be demonstrated.

It is to be added that the duration of residence in the sanatorium varied from a minimum of a few weeks to a maximum of 14 months, the average working out at some four to six months, and that, except during the years 1911 to 1914 inclusive, the treatment consisted of general hygienic measures only. During these particular years tuberculin was given, in addition to the usual sanatorium treatment, in a varying number of cases.

Actually during 1911 the percentage of T.B. + cases which received tuberculin was 13·0; during 1912, 76·4; during 1913, 61·0; and during 1914, 23·2. Therefore it is in the records of 1912-13 and 1913-14 that indications of the effect of tuberculin treatment are to be looked for.

Record of Loss of Tubercle Bacilli During Successive Years 1906-1917.

(A) Number of cases. (B) Of which had tuberculin. (C) Total number of cases which lost T.B. (D) Percentage.

Group 1.

—	1906-07	1907-08	1908-09	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	Totals
(A)	30	45	28	43	45	33	15	19	20	16	24	318
(B)	0	0	0	0	0	6	15	14	9	0	0	—
(C)	14	18	16	15	11	15	8	7	10	9	15	138
(D)	46·6	40·0	57·1	34·8	24·4	45·4	53·3	36·8	50·0	56·2	62·5	43·3

Group 2.

(A)	57	85	94	99	100	110	102	95	99	71	99	1011
(B)	0	0	0	0	0	18	81	71	22	0	0	—
(C)	14	19	22	16	21	28	26	21	22	15	23	227
(D)	24·5	22·3	23·4	16·1	21·0	25·4	25·4	22·1	22·2	21·1	23·2	22·4

Group 3.

(A)	38	80	83	50	54	55	44	63	76	69	91	703
(B)	0	0	0	0	0	2	26	23	19	0	0	—
(C)	0	9	2	0	0	2	3	4	4	1	7	32
(D)	0	11·2	2·4	0	0	3·6	6·8	6·3	5·2	1·4	7·6	4·5

These results may be thus summarised:—

Of 318 T.B. + cases classed in Group 1 discharged during the 11 years under consideration, 138, or 43·3 per cent., had a negative sputum when they left the sanatorium.

Of 1011 T.B. + cases classified in Group 2, 227, or 22·4 per cent., were discharged with T.B. no longer to be demonstrated in the sputum.

Of 703 T.B. + cases classified in Group 3 the disappearance of the bacilli from the sputum was obtained in 32 only, or less than 5 per cent.

The records of loss of T.B. (43·3 per cent.) for cases in Group 1 are satisfactory evidence of the value of sanatorium treatment in the initial stages of the disease. The relatively poor results obtained among the large, and therefore the more important, group of moderately advanced cases (Group 2) suggest that for this class of patient an average of some 4 to 6 months' treatment is inadequate.

Variations in Percentage Figures for Loss of T.B.

Considerable fluctuations in the percentage figures for loss of T.B. is to be noted year by year.

Among the Group 1 cases the minimum was 24·4 per cent. and the maximum 62·5 per cent., occurring in the years 1910-11 and 1916-17, respectively. Tuberculin was not given at the sanatorium in either of these years; and in every respect the principles of treatment were identical. Among the Group 2 cases the variation was less marked—namely, from a minimum of 16·1 per cent. to a maximum of 25·4 per cent. Similarly, among the Group 3 cases there was a variation of from 0 per cent. to 11·2 per cent.

It is not easy to explain these variations with any confidence.

An examination of the meteorological records of the sanatorium does not suggest any association with the climatic conditions which characterised the different years. As previously stated, the methods of treatment remained constant with the exception of the tuberculin era, but the fluctuations clearly are independent of the factor of specific treatment.

A variation in the clinical condition of the patients admitted from time to time is, I think, the explanation.

The more favourable results are the outcome of a better, although to a large extent an unconscious, selection of cases. For instance, of a number of patients who come within the definition of Group 1 some prove to be possessed of much greater recuperative power than others. It occurred to me that the period of treatment in which the T.B. disappeared from the sputum in various cases might throw some light on the point.

In some instances T.B. were not found after the first examination—namely, on admission; in many not later than the eighth week. Patients with widely diverse lesions are included in this group of "early loss of bacilli," the common foctor being a good response to treatment. Many patients, on the other hand, did not lose their T.B. until the completion of three, four, or six months' residence and longer.

On the whole the tendency is for the disappearance of T.B. to occur during the first 12 weeks of treatment. If they are still present after this period the probabilities are that a further three months will not bring about their disappearance. This is but another way of expressing that it is patients who show the greatest tendency to spontaneous arrest of their disease that make the best and most rapid recoveries under sanatorium conditions. The larger number of such cases included among the admissions during any given year will be reflected in the percentage figures for disappearance of T.B.

The Influence of Tuberculin Treatment.

It has been claimed that when tuberculin is given in addition to the usual hygienic measures employed at a sanatorium the probability o T.B. disappearing from the sputum is increased. I do not think that any influence of tuberculin can be discovered in the Midhurst records. The percentage figures for the two years during which tuberculin was so largely used—namely, 1912-13 and 1913-14, are practically the same as the records for two years subsequent to this period—namely, 1915-16 and 1916-17, during which tuberculin was not employed at all.

I have to thank the Council of King Edward VII. Sanatorium for permission to publish this brief record.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF MALTA FEVER ARISING IN ENGLAND.

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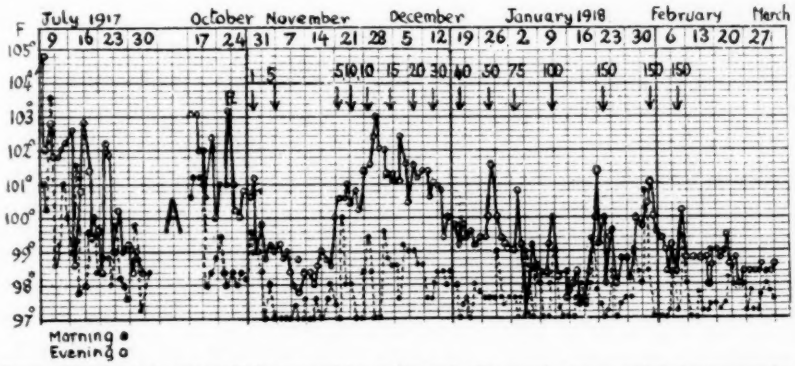
THE case to be described seems undoubtedly to be one of infection by *M. melitensis*, and as it would appear to have been contracted in this country it merits record for its rarity. It also points to a possible introduction of sources of infection into this country as the result of the war, for I imagine the number of goats has been increased in order to supplement the milk-supply, as these animals are more easily fed, at present, than cows.



Temperature chart of a case of Malta fever arising in England. The record covers a period of seven months, with an interval at A of two and a half months, and for the sake of clearness the morning readings are joined by an interrupted line, the evening readings by a continuous line. At R rheumatic pains were felt in the neck. The arrows indicate injections of stock *M. melitensis* vaccine, the figure denoting millions. While febrile in October, the average pulse rate was between 90 and 100, the maximum being 104 and the minimum being 74. The respiration rate never varied from normal.

The patient, a male aged 50, of independent means, and at no time serving in the Army or Navy, writes the history of his illness as follows:—

"I was never in Malta and never to my knowledge tasted goat's milk, nor have I associated with anyone suffering from Malta fever to the best of my belief.

I spent the winter of 1890–91 in Corfu and Athens, and while abroad had a very slight touch of chill or fever after duck-flighting waist deep in water—only in bed one day. I next spent two o. three weeks at Ostend early in 1893, and six weeks at Biarritz in the spring of 1898. These are the only occasions on which I have been out of the United Kingdom.

The first symptoms of my present illness commenced at the end of May or the beginning of June, 1917. I took to bed with rheumatic pain in the heel on June 28th and discovered my temperature to be 102° F. My blood was subsequently tested for typhoid and my lungs examined for consumption, both with negative results. On August 3rd I was sent from London into the country for a change and got gradually better. During September perspirations stopped and my temperature became normal. I then returned to London and felt fairly fit for a few days when shiverings began again and fever returned. Each evening on going to bed about 6 P.M. I felt very hot, and after a short sleep would wake shivering violently and drenched with sweat, so that my pyjamas sometimes required changing six or seven times during the night. During my first fever-wave my temperature once reached 105°. My appetite has been fairly good throughout."

The patient came under my personal observation on Oct. 19th, 1917. He was then obviously ill and much wasted. His skin was healthy and nothing abnormal was detected in the heart or lungs. The liver and spleen were both palpable but not tender. The whole abdomen was slightly distended and tympanitic—the patient's chief complaint being of abdominal distension. Peripheral blood taken at 2 P.M. that day showed no evidence of malaria. The urine was slightly alkaline though otherwise normal. Temperature is shown on the accompanying chart. That night the patient slept fairly well, but perspired freely and the following morning complained of headache. On Oct. 22nd his blood gave no agglutinins for typhoid or paratyphoid A and B. A differential white blood count gave:—

Polymorphonuclears	24 %	Large mononuclears	15 %
Lymphocytes	61 %	Eosinophils and basophils..	nil.

That day his blood agglutinated *M. melitensis* in dilutions up to 1 in 500 in 30 minutes at 82° F. A control serum gave a slight positive reaction up to 1 in 20 under similar conditions. This was approximately the patient's 144th day of disease.

Attempts to recover *M. melitensis* from the urine failed, it being impossible to pass a catheter owing to slight enlargement of the prostate.

On Oct. 23rd rheumatic pains and stiffness were complained of in the neck. At this time depression and inability to concentrate the attention were marked features of the case. As the evening rises of temperature continued, with profuse sweating, and as the patient was obviously making no progress a vaccine was prepared from stock cultures of *M. melitensis*. On Nov. 1st one million organisms were injected subcutaneously at 2 P.M. That night the patient perspired even more freely than usual, and complained of pain in the arm injected. The local reaction was severe and persisted for some days. On the 6th a second injection of five millions was given, with less local and general reaction. Thereafter the temperature remained normal for nearly a fortnight and the patient's general condition greatly improved. At this time he was taking a good mixed diet with a high vitamine content, and being massaged daily. During this apyrexial interval the neighbourhood of the right hip-joint became acutely painful, though no physical signs were detected. Dowsing radiant heat procured relief and allowed the patient to sleep.

On Nov. 20th the temperature again rose to 100° at 8 P.M., so the following day a third vaccine injection of five millions was given. Further injections at intervals of four to five days were given, the dose gradually rising to 30 millions on Dec. 14th. Each dose caused both a general and local reaction, though of decreasing severity, but the fever-wave appeared to be in no way influenced and extended over a period of 27 days. The dates of the remaining seven injections are shown on the chart. The reaction became successively less and the patient's general condition steadily improved. At the end of January both knee-joints became slightly tender and contained fluid, but without apparent thickening of the peri-articular structures. This condition rapidly subsided under local applications of collosol iodine in oil. On Feb. 11th blood serum agglutinated *M. melitensis* in dilutions up to 1 in 50 only. By the end of February the patient was resuming his normal life. The spleen was still palpable, though the patient was otherwise apparently recovered. On March 7th he reported: "General improvement continues, temperature ranging from 97·2° to 98·8°; pulse 75 to 99, the higher figure following either breakfast or lunch; sleep is good and without perspiration."

Seen again on April 2nd, the spleen was still just palpable on deep inspiration; the temperature had continued normal, and the patient expressed himself as well. Blood serum agglutinated *M. melitensis* in dilutions up to 1 in 50.

A SUCCESSFUL CASE OF HERNIA INTO THE MESO-SIGMOID FOSSA.

BY GORDON TAYLOR, M.A. ABERD., M.S., B.Sc. LOND., F.R.C.S. ENG.,
MAJOR, R.A.M.C., T.C.; SENIOR ASSISTANT SURGEON, MIDDLESEX HOSPITAL, ETC.

IN an exhaustive article by Rendle Short upon herniæ into peritoneal fossæ [1] a short time ago several cases of this variety of hernia were included. The condition is apparently very rare, and still more rarely has been successfully treated by operation.

A man, aged 27 or 28, was admitted into Middlesex Hospital in the early hours of a morning in January, 1908. He was sent into hospital as suffering from acute intestinal obstruction of short duration. The ordinary signs of an acute abdominal crisis were present, and a couple of enemata had failed to produce any relief of the bowel. The doctor, of whose professional capability I entertained the highest opinion, had given him a large dose of morphia before sending him up to hospital, and with him came an urgent note to that effect and a request to explore the abdomen without delay.

Laparotomy was performed through a median incision, and coils of distended and collapsed small intestine were found. On tracing the latter I was led to a fossa under the meso-sigmoid in which a knuckle of small bowel had become ensnared. Bowel not very firmly engaged. After edge of opening into fossa had been cautiously "nicked," intestine was readily freed. Contents of distended intestine above were seen to empty themselves into distal collapsed portion. Owing to difficulties with anæsthetic nothing was done to obliterate fossa. Bowel acted later in day. Recovery uneventful.

I heard of the patient some four or five years later, and he was then in good health. He owes his life to the diagnostic skill of Dr. H. B. Shepherd, the medical attendant called in, to the prompt manner in which he was transferred to hospital, and to the urgent desire of this doctor for an immediate abdominal exploration.

[1] British Journal of Surgery, 1916.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Exhibition of Cases and Specimens.—A New Form of Bi-focal for Myopes.—Hysterical Disorders of Vision.

AN ordinary meeting of this section was held on June 12th, Mr. WILLIAM LANG, the President, being in the chair.

The PRESIDENT made a sympathetic reference to the decease of Mr. John Couper, who for many years had been a colleague of his own at Moorfields Hospital.

Dr. G. H. GOLDSMITH exhibited a case of Cystic Swelling of the Disc. There was no coloboma of the iris, but the disc was large and colobomatous, while below the disc was a coloboma of the choroid. The disc had suffered almost complete eclipse. It was spheroidal and semi-translucent and over the swelling ran two vessels.

Mr. F. A. C. TYRRELL showed a case of Mooren's Ulcer. It showed extensive denudation. A year ago the patient had a large denuded area with a small circular area of epithelium in the centre of his cornea about 4 mm. across. Vision was very poor. Two cauterisings did not result in healing. He then tried the conjunctival-flap method, using purse-string sutures, and the conjunctiva adhered to the denuded area in the outer part, and the cornea vascularised. As it did not progress well in a month, however, he decided to unite the lids in the centre, so as to flush the conjunctival sac through from side to side. The cornea was now steadily clearing up, a little less than a year after that procedure. The patient was blind in the other eye. He could now find his way about without aid.—The PRESIDENT spoke of a success he had had in corneal ulcer from the use of solid flavine.—Mr. LESLIE PATON said that in his experience, though sewing of the lids together was very effective in treatment, in herpes as well as ordinary ulceration of cornea, attempts to break down the whole of the adhesions later by re-separation of the lids led to a relapse, if something more than a millimetre was not left. He had found that so in neuropathic keratitis following operations for removal of the Gasserian ganglion. He quoted cases.—Mr. J. B. LAWFORD said his experience in the class of case differed from that of Mr. Paton. A colleague of his did a number of Gasserian ganglion operations, and Mr. Lawford sewed the lids together, and when eventually he reopened them there was no relapse in any.

Mr. MALCOLM HEPBURN read notes of a case with an old choroidal scar and a fibrous band stretching from it to the disc. The woman, whose age was 26, was unaware of this condition; she came to be tested for glasses. She gave no history of any accident or inflammation in the eye. The projections of choroid in this case followed the lymph channels, going towards the disc. It may have been a fibrous tissue development following accident, or congenital.

Mr. A. ROXBURGH exhibited an interesting example of Implantation Cyst in a girl, aged 14 years, following the striking of the eye by a toy aeroplane made of tin. Operation was, the mother said, performed immediately, and probably the prolapsed iris was removed. It caused no trouble until three weeks ago, when some pain and pricking were complained of. The mother noticed a dark spot in front of the eye. Vision in that eye was nearly 6/6; now, however, it had fallen to 6/12. The tension was but little raised. Some iris was adherent to the back of the cornea. Beneath the cornea was a translucent cyst, about 4½ mm. wide, which appeared to be embedded in the iris. The cyst had recently encroached somewhat, and probably accounted for the reduction of vision.—Mr. TREACHER COLLINS agreed with Mr. Roxburgh's view. The cyst ought to be removed, otherwise it would fill the anterior chamber of the eye eventually and increase the intra-ocular tension. In effecting the removal it would be necessary to take away a piece of iris, in order to check subsequent extension.

Mr. M. S. MAYOU showed, for Captain F. H. MOXON, Illuminated Test-types for the purpose of Estimating the Light Sense and Night-blindness. It was really a development of the illuminated wrist-watch, but there had to be different figures and arrangement. The normal individual could read the types in a completely darkened room at an average distance of 4 feet, after a short period of getting accustomed to the circumstances. Mr. Mayou said he had ascertained that the paint was composed of radium bromide, with zinc sulphide, and the radium emanations bombarded the zinc sulphide, so producing the light. It could scarcely be looked upon as a standard, however, because after about two months from being made the luminosity became progressively diminished. The luminosity of the substance also varied with the proportion of radium used and the size of the letters on the apparatus. The most satisfactory test of luminosity was by means of a screen with a standard light behind it, the observer wearing green glasses.

Mr. PATON showed and described a case in which neuro-retinitis was associated with chicken-pox. There was no other event in the boy's medical history. On the third day of his chicken-pox he had sudden blindness, and his sight had remained defective ever since. He still had a large irregular central scotoma, and there was also some limitation of his peripheral fields. Vision still remained less than 6/60.

Mr. P. C. BARDSLEY read a paper entitled "A New Form of Bi-focal for Myopes." He contested the idea that in early life the myope should wear continuously fully-correcting glasses. There was no evidence that lack of full correction in the case of a myope increased the degree of his defect. He asked why myopes should be robbed of the privilege of using their ciliary muscles. The new bi-focal glass was designed to remedy the distortion of image on looking down through the ordinary bi-focal. To overcome the difficulty of bringing the edges of the upper and lower glasses into continuous contact he ground a toric curve on the upper lens and a double concave or convex on the lower lens.

Dr. L. R. YEALLAND read a paper on Hysterical Disorders of Vision, which he grouped clinically into two classes, according to whether or no the contraction of antagonists could be demonstrated—i.e., the contraction of a group of muscles which should be relaxed during the performance of a given movement. The phenomenon may be demonstrated in blepharospasm, ptosis, and spasm of accommodation. In blepharospasm there is simultaneous contraction of the lev. palp. sup. and of the orbic. oculi; the failure of the relaxation of the latter muscle prevents the eye opening and so there is apparent loss of vision. A condition of blepharospasm intervenes in ptosis before recovery is effected. The phenomenon cannot be demonstrated in such conditions as limitation of the visual fields and amblyopia, but in these contraction of antagonists in some other part of the body may be observed.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of the papers read at a meeting of this society held on June 8th:—

NAGEOTTE and GUYON.—Differences in the Neuroglia of Afferent and Efferent Nerve Fibres.

Au-dessous d'une cicatrice nerveuse, après section totale les branches motrices du nerf régénéré se distinguent des branches sensitives par leurs fibres plus grosses. Les expériences de suture croisé pratiquées sur le nerf du jumeau interne et le saphène externe montrent que la névroglie sensitive ne permet pas aux neurites moteurs régénérés d'acquérir leur plein développement, tandis que la névroglie motrice n'entrave pas celui des neurites sensitifs.

LE FEVRE de ARRIC.—Culture of Wound Streptococci in Blood Broth.

Sur 25 examens, la culture directe des secrétions de plaies dans le bouillon-sang (bouillon ordinaire + globules rouges humains) a provoqué l'hémolyse, après 12 heures d'étuve dans 35·5 per cent. des cas. 75 per cent. de ces cas d'hémolyse étatient dûs à la présence du streptocoque, 27 per cent. à d'autres microbes, surtout de bacilles. C'est un procédé simple, donnant des indications utiles. Pour déceler sûrement le streptocoque, il sera cependant préférable d'utiliser des milieux plus spéciaux.

WEIL, MOURIQUAND, and VERONNET.—Appearance of Antiscorbutic Substances in Germinating Grain.

Contrairement à l'opinion courante, la germination des graines (3e jour) ne développe pas leur pouvoir antiscorbutique. La substance antiscorbutique ne semble apparaître qu'ultérieurement au cours du développement de la plante. Par contre, cette germination assure à l'animal (cobaye) une survie double, triple ou quadruple de celle assurée par les graines sèches, pour des raisons dont la plupart restent à élucider.

MONZIOLS.—Rapid Hand Disinfection with a Paste of Chloride of Lime.

Dérivé d'un procédé américain qui consiste à faire une pâte avec 20 grammes de chlorure de chaux et de carbonate de soude à parties égales, mais qui provoque rapidement de la dermite, le procédé de l'auteur obvie à cet inconvénient. On mélange dans une petite cuvette 10 grammes d'acide borique et 15 grammes de talc avec une dose qui varie (selon la souillure des mains et le degré de sécurité désiré) de 0 gr. 25 à 2 gr. de chlorure de chaux titrant 28 à 30 degrés chlorométriques anglais et conservé dans des tubes scellés ou bouchés et paraffinés. Quelques centimètres cubes d'eau ajoutés en font une pâte qui permet d'obtenir l'asepsie complète des mains en 3 minutes.

Reviews and Notices of Books.

WAR SURGERY.

1. *Military Surgery.* By DUNLAP PEARCE PENHALLOW, S.B., M.D. Harv., Major, Medical Reserve Corps, U.S. Army. With Introduction by Sir ALFRED KEOGH, K.C.B., Director-General, A.M.S. Original drawings by the Author. London: Henry Frowde and Hodder and Stoughton. 1918. Pp. 556. Price 21*s.* net.
2. *Handbook of Operative Surgery.* By WILLIAM I. DE C. WHEELER, B.A., M.D., F.R.C.S.I., Lieutenant-Colonel, R.A.M.C. With an Introduction by Surgeon-General Sir ALFRED KEOGH. Third edition. London: Baillière, Tindall, and Cox. 1918. Pp. 364. Price 10*s.* 6*d.* net.
3. *A Practical Handbook of Surgical After-Treatment.* By ALAN H. TODD, B.Sc., M.S. Lond., F.R.C.S. Eng., Surgical Registrar and Tutor, Guy's Hospital, Surgeon to King George Hospital. Second edition. London: Edward Arnold. 1917. Pp. 236. Price 4*s.* 6*d.* net.

1. LESS than a year has elapsed since the first edition of this work appeared, yet, although the interval is short, the rapid progress in the methods of treating modern war wounds has made many changes necessary. The sections devoted to treatment have undergone most revision, a full account being now given of the Carrel method. The author's conclusions are sound, and the book forms a trustworthy guide to the surgery of the war.

2. The third edition of this handbook differs in several respects from its predecessors. Originally the book was intended for those taking a course of surgery for the first time, and therefore attention was directed mainly to those operations performed on the cadaver, but in the present issue an endeavour has been made to provide an introduction to the operations which a newly qualified medical man may be called upon to perform on patients brought back from the fighting line. Therefore a third of the book has been devoted to descriptions of the ligature of arteries and to the various forms of amputations. The author has striven to keep the book small, and the rarer operations receive brief allusions. Of the utility of the book there can be no doubt.

3. We were able to speak favourably of this little book when it was first published, and we welcome its renewed appearance. The main changes in the present issue deal with the treatment of the septic wounds met with in war surgery; and a much fuller account is given of the after-treatment of cases in which operations on the rectum have been performed. The author tells us that by the use of these methods it will be found possible to avoid practically all the pain and troublesome sequelæ commonly associated with the operations. In this edition drugs and preparations of German origin have been removed and preparations of British manufacture substituted.

Bipp Treatment of War Wounds. By RUTHERFORD MORISON, Professor of Surgery, Durham University. Oxford University Press. 1918. Pp. 72. Price 2*s.* 6*d.*

IN this thin war primer Professor Rutherford Morison summarises the technique and results of a method of treating infected suppurating war wounds by means of a bismuth-iodoform-paraffin paste, which he first described in our columns of August 12th, 1916. He claims that the method is so simple as to render a *clever* surgeon unnecessary for the achievement of the best results, although a *careful* one is essential. Bipp has now been extensively tried at home and on the Allied fronts, and materials for a considered verdict are accumulating.

Human Intestinal Protozoa in the Near East. By C. M. WENYON, B.Sc., M.B., B.S., Temp. Lieut.-Col., R.A.M.C., and F. W. O'CONNOR, M.R.C.S., L.R.C.P., Temp. Capt., R.A.M.C. London: John Bale, Sons, and Danielsson, for the Wellcome Bureau of Scientific Research. 1917. Pp. 218. Price 10*s.* 6*d.*

THIS book embodies the study of the human intestinal protozoa in Egypt, undertaken by the authors at the suggestion of Sir William Babtie, in consultation with the Medical Advisory Committee to the Mediterranean Expeditionary Force, and, coming as it does from the pen of recognised authorities on the subject, it will appeal to all concerned with the diagnosis and treatment of intestinal disorders produced by protozoa. The characters and diagnosis of amœbæ and their cysts in the stools are thoroughly dealt with, and there is much valuable information with regard to the differential diagnosis between different species. The description of the character of the stools in bacillary and amœbic dysentery is good and is the outcome of a very large experience. The pathogenicity of *Entamœba histolytica* is now accepted, but much difference of opinion has existed as to the part played by other protozoa in the causation of diarrhœa and dysentery. We are therefore glad to notice that the authors have attempted to answer the question in the light of their own considerable experience. In their opinion there is no justification for regarding *Entamœba coli* as pathogenic. *Lamblia intestinalis*, on the other hand, may be considered pathogenic, for "certain cases of lamblia infection have attacks of a characteristic nature when they pass large quantities of yellowish mucus in which occur unencysted lamblia in myriads." Later on the authors say: "We thus have much more proof of the pathogenicity of lamblia than in the case of either trichomonas, tetramitus, or any of the rarer flagellates, all of which are most usually encountered in diarrhœic conditions in which mucus production is not generally a feature of the case." The authors are fully alive to the fact that many healthy, able-bodied men are carriers of lamblia for every one who shows symptoms or is incapacitated in any way by its presence. As regards *Trichomonas intestinalis* they are of opinion that while it may in some cases cause diarrhœa, and possibly a diarrhœa persisting over several months, in the vast majority of cases in which it has been found it has in no way been the cause of trouble. Two new human intestinal flagellates (*Waskia intestinalis* and *Tricercomonas intestinalis*) and a new amœba (*Entamœba nana*), are described and figured.

The book is a notable contribution to the study of human intestinal protozoa.

NEW AMERICAN EDITIONS.

1. *A Text-book of Obstetrics.* By BARTON COOKE HIRST. Eighth edition. 1918. Pp. 863. Price 21*s.*
2. *The Practice of Pediatrics.* By CHARLES GILMORE KERLEY. Second edition. 1918. Pp. 913. Price 28*s.*
3. *A Practical Text-book of Infection, Immunity, and Specific Therapy.* By JOHN A. KOLMER. Second edition. 1917. Pp. 978.
4. *The Principles of Hygiene.* By D. H. BERGEY. Sixth edition. 1918. Pp. 543. Price 16*s.*
5. *Infant Feeding.* By CLIFFORD G. GRULEE. Third edition. 1917. Pp. 326.

London and Philadelphia: W. B. Saunders Company.

WAR conditions have not prevented the issue in revised form of a number of standard American text-books which have recently received extended notice in these columns.

1. Dr. Hirst has earned the gratitude of his readers by condensing his text while reviewing new work of importance. The book now conforms more closely to the usual practice of dealing with obstetrics alone and only including such notice of diseases of women as is essential to the proper understanding of the pathology of pregnancy and the puerperium.

2. The general plan of the book remaining the same, Dr. Kerley has rewritten many of the chapters, especially those dealing with the newer diagnostic methods, the essentially practical character of the treatment of the subject being retained.

3. The newer methods in regard to immunity reaction have been included and Dr. Kolmer deals at length with an attempt to standardise the Wassermann reaction. Anaphylaxis receives extended notice, while the author justifies his inclusion of the section on experimental immunity, which adds greatly to the bulk as well as to the value of the book.

4. The author has kept pace with the advancing knowledge of hygiene without increasing the size of the volume. Dr. Bergey's book in its present form will be consulted more as a comprehensive, if sketchy, outline of the practice of public health in the United States of America than for the new hygienic teachings of the European conflict.

5. Dr. Grulee takes account of the addition to our knowledge of the chemistry of metabolism, and has revised the chapter on absorption in the light of this knowledge. The new edition considers in greater detail the nutritional disturbances of the artificially fed infant in the light chiefly of American and Continental experience.

JOURNALS.

Parasitology. Edited by GEORGE H. F. NUTTALL, F.R.S., assisted by EDWARD HINDLE, Ph.D. Vol. X., No. 3, April, 1918. Cambridge University Press. Price 12*s.* 6*d.* net.—"The Life History of *Distoma Luteum*, n. sp., with Notes on some Cercariæ and Rediæ found in S. Africa," by J. D. F. Gilchrist, comprises an account of a new species of fluke which occurs in frogs in South Africa. In searching for the intermediate stages of the sheep-liver fluke in the snails of that country various types of Cercariæ and Rediæ were observed, and one of these was found to develop in the intestine of frogs. The life cycle of this species, *D. luteum*, was then followed through all its stages in the intermediate host, *Physa tropica*.—"A Study of the Diverse Races of *Entamœba histolytica* Distinguishable from One Another by the Dimensions of Their Cysts," by Clifford Dobell and Margaret W. Jepps, is an interesting article on the human dysentery amœba, of which the following is a brief summary:—

It appears that *E. histolytica* is a collective species, comprising at least five distinct races, which may be distinguished from one another by the size of the cysts which they produce. These races remain constant in character within a given host, and two distinct races may co-exist side by side in the same patient. The most suitable fixative for the cysts was found to be a modification of Schaudinn's fluid, no appreciable shrinkage or swelling taking place in this medium, the apparent loss of size in mounted specimens being due to the invisibility of the cyst wall in the balsam. The authors found no evidence of the existence of a sexual dimorphism in the cysts belonging to a single race. Since cysts of *E. histolytica* may be found with all diameters from about 5μ to 20μ, a range overlapping the dimensions of the two common harmless intestinal amœbæ of man, it is of considerable practical importance to recognise and distinguish the diverse races of the dysentery amœba which differ from one another in the dimensions of the cysts which they produce.

—*Dentamœba fragilis*, n.g., n.sp., a New Intestinal Amœba from Man, by Margaret W. Jepps and Clifford Dobell, contains the description of a new harmless amœba which occurs in the human intestine. This species has only been found in seven cases out of many thousands of stools examined, so that it must be comparatively rare. The amœba is binucleate and cyst formation has not been observed, and as it differs considerably from any of the known species a new genus has been proposed for it.—The Trematode Parasites of North Queensland—IV., Parasites of Reptiles and Frogs, by William Nicoll, comprises another part of the writer's extensive article on this subject. In the present article four new species of trematodes are described, one of which forms the type of a new genus.—The Pathological Effects of *Phthirus Pubis*, by George H. F. Nuttall, contains a useful summary of our knowledge of this subject, together with original observations. The presence of this parasite is accompanied by all grades of pruritus and the development of pale bluish-grey maculæ which are a specific sign of *Phthirus*. Though not always present, they are induced by the adult louse, are few in number, painless, deep-seated, do not disappear on pressure, and measure 0·2-3 cm. in diameter. They appear 8 to 24 hours after the louse commences to feed, and may also be produced by subcutaneous injection of the contents of the salivary glands. The bites of *Pediculus humanus* do not produce these maculæ cœruleæ.—The Biology of *Phthirus Pubis*, by George H. F. Nuttall, is the most complete account that has hitherto been published on this subject.

The article is divided into three parts: (1) on the prevalence and modes of dissemination of *phthirus*; (2) methods of raising the parasite experimentally; and (3) the special biology, including the life-history, feeding habits, &c. With regard to its prevalence the author reports two instances of the louse being found on dogs, and it would be of interest to determine if *phthirus* can be raised experimentally on this animal. Unless disturbed the parasite remains confined throughout its life to a limited area and commonly clings to two hairs. The females appear to preponderate over the males, the relative proportion being about 3:2. Oviposition occurs as in *pediculus* and 26 eggs were laid by one of the females under observation, not more than 3 eggs being laid in any one day. The hatching period lasted 7-8 days, and the larva passes through three moults before becoming adult. The life-cycle from egg to egg was completed in 22-27 days on the leg on which the parasites were reared. These lice soon die when removed from the body, the maximum period they ever survived being 42½ hours. On emerging the young larva clasps a single hair and feeds at the base, but after a day or more it usually clasps two hairs, as in all the later stages. They feed continuously after the manner of an ixodid tick, and this habit explains why they die so quickly when removed from the host.

—On the Occurrence of a Cephaline Gregarine, *Leidyana tinei*, n. sp., in Lepidopterous Larvæ, by D. Keilin, comprises a description of a gregarine which lives in the larvæ of the moth *Endrosis fenestrella*, found in the nests of the house-martin. They were found in almost all the moth larvæ, and the author was successful in finding all stages in the life-cycle of this parasite. This is the first record of gregarines occurring in lepidoptera.

The Military Surgeon, April, 1918.—In this number great appreciation is expressed for the free ventilation observed in English camp huts, and for the persistence with which English troops, accustomed to play football in the rain, continue their military training in all weathers.—Great saving was made in a United States hospital when each sister, each orderly was made personally responsible for waste in that ward or section, and the cook was taught economical ways and the reasons for them. There are at least forty wards in that hospital, but now, except for orange peel, celery tops, and such-like, one garbage-can daily holds all the waste there is.—An article by "A Military Observer" commends our hospital trains in France for the skill, ease, and rapidity with which patients are handled, stating that patients may remain on their stretchers from the field ambulance to the hospital ship or even to England. Naturally, the observer is favourably impressed by the work of the United States surgeons, noting especially their teamwork and their numerous specialists. He thinks we have too few nurses in our much-expanded hospitals. He talks of a convalescent hospital in France for 40,000 beds, and notes the great help given the nurses by the V.A.D.'s. He adds that the food was plentiful, well prepared and served, and waste systematically avoided. The protection of latrines from flies was never as good as in the United States Army; and the observer considers that the X-ray outfits in France were of antiquated design and without sufficient current, leading to regrettable delay and difficulty in the diagnosis of cranial injuries; also that wounds are too often sutured in casualty clearing stations, and healing thus delayed. He mentions an English venereal hospital of 3000 beds (400 for officers) in which some 4000 cases of syphilis are treated per year, yet only about 70 invalided home. There were, he says, three times as many cases of gonorrhœa as of syphilis, and three other venereal hospitals; he hopes, therefore, the American Expeditionary Force, in addition to prophylaxis, will have venereal hospitals ready to minimise this scourge of armies.

New Inventions.

A MODIFIED BOX-SPLINT.

THE splint herewith illustrated consists of two pieces of soft wood ½ inch thick, 5 inches wide, and long enough to extend from above the knee to 3 or 4 inches beyond the sole of the foot. As will be seen from Fig. 1, each splint has a longitudinal slit passing through its centre and extending to within 2 inches of either end. The slits are sufficiently wide (about ½ inch) to allow a double layer of linen (about 2 yards in length) to be passed through them. In application the splints are approximated to the width of the limb, which, after being dressed, is laid on the portion of the linen separating the two splints (Fig. 2). The double layer of linen is then brought over the side of the splint and over the upper surface of the limb, the space between the limb and the splint being previously packed with wadding. The two free ends of the linen are brought respectively above and below the limb and secured in place with safety-pins (Fig. 3). Extension can be applied when necessary. The advantages of these splints are: (1) they can be rapidly adjusted to the width of the limb by sliding them on the stretched linen; (2) the limb rests on a hammock formed by the two layers of linen between the splints and is raised off the bed; (3) the splints need not be padded, as only that portion of the splint above the linen diaphragm comes into contact with the limb and this can be packed with wadding to avoid splint pressure.

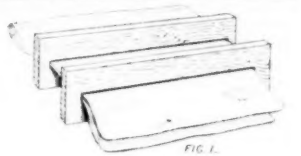


FIG. 1.

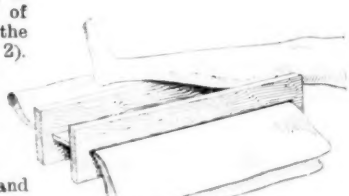


FIG. 2

FIG. 3

FRANK COLEMAN, Major, R.A.M.C. (T.F.),
British Expeditionary Force.

THE LANCET.

LONDON: SATURDAY, JUNE 22, 1918.

The Medical Grading of Recruits.

IN the House of Commons on Tuesday last Sir AUCKLAND GEDDES, the Minister of National Service, had rather a difficult task when, in reply to a question from Sir FRANCIS LOWE, he undertook to explain to a body of laymen the medical principles upon which the grading of recruits is founded. It will be seen on reference to the notes of our Parliamentary Correspondent that several interrogatories bearing on the matter had been addressed to Members of the Government during the week. In explaining that there had been no change in the standards of medical fitness required for classification in the present Grades 1 and 2, Sir AUCKLAND GEDDES pointed out that Grade 1 could be defined as meaning men who "attain a normal standard of health and strength and are capable of enduring the physical exertion suitable to their age," quoting the words from the Recruiting Code, and stating that this definition had been placed in the Library of the House of Commons in October last, and that it had never varied. He added that in the medical grading of recruits current statistics, covering a large number of examinations, showed no increase in the proportion of men placed in Grades 1 and 2, Grade 2 being generally equivalent to Category B 1 and Category C 1 in the old classification, and comprising men passed for garrison service at home and abroad. Sir AUCKLAND GEDDES stated further that the number of complaints by the recruits as to the methods or results of medical examination was now small; and, as will be seen by our Parliamentary report, his figures showed that a large number of these complaints had been promptly dealt with. Transfer to the Ministry of National Service of the machinery and powers relating to recruiting has this fact to its credit—the men concerned feel more satisfied that their cases are receiving fair consideration, and it would seem that where complaints have been made inquiry has often proved them unfounded.

The older system of medical classification used by recruiting medical boards was definitely abandoned in 1917 as not being based on sound medical grounds. The institution of four medical Categories—namely, A, B, C, and Rejected—worked fairly well until multiplication and subdivision of these Categories, presumably for military reasons, reduced much of the medical side of recruiting to impossible hairsplitting. Grading, under the Ministry of National Service, has been arranged to avoid this difficulty, the simpler plan of classifying men under a few well-marked headings being introduced when the general medical practitioners of the country were appointed by the Government to undertake the duty of examining the male population through civilian medical boards. But now it appears, from Sir FRANCIS LOWE'S questions and those of other Members of Parliament, that the Tribunals are seeking a more detailed grading of the men in order to facilitate their work. Such detailed grading can hardly be made on medical grounds alone, being complicated with the question of any man's particular fitness for military work or particular indispensability as a civilian. To us it would seem that the duty of civilian medical boards is well defined; they have to decide to which of certain grades of physical fitness a recruit belongs, and they cannot pronounce clear opinions unless the issues before them are limited in this way. The determination to make the grades few and marked was taken after consultation with leading medical authority in the country, and seems to us to have been a right one.

When it became certain, in the military situation, that the conscription age would be raised by a new Military Service Act, the matter of grading was carefully considered by the Ministry of National Service, the lines of possible procedure being clearly two: first, to devise a new system of grading for the men of the older years; or, secondly, to continue the system of grading already in use and apply it to the men of the older years. The view taken by the Medical Department of the Ministry was that to introduce a new system of grading with its lower limit at the age of 43 would have no firm foundation either on medical reasons or on reasons of efficiency for military or civilian work. It was felt that such an innovation would interfere with the system of grading already in operation, and disorganise the methods in which the medical boards had already received considerable training. The Medical Department of the Ministry consulted the high medical authorities who had previously assisted in the drawing up of the system of grading, and received the opinion, clearly and firmly expressed, that it would not be possible to establish different systems of grading for men of different ages: and as a result the existing "Instruction to Medical Boards as to the Grading of the Older Men" was issued. The problem placed by the Government before the National Service Medical Boards is an entirely new one for this country, but one with which the countries where military conscription holds are quite familiar. All the foreign military powers have an older army which is developed alongside their younger army. From these older men military work of a certain character, and up to a certain standard, is expected. It is the hard case of this country that this work should be expected of our middle-aged men, while they have not behind them the early training. But, thank God, they have the patriotic spirit. This fact is a great national asset, but actually adds to the responsibility of the civilian medical boards, who have no precedents on which to fall back. Our opinion is that these boards are doing admirable work; certain it is that much of the criticism of that work has been ill-directed.

"Live" Medicine and its Diffusion.

RIGHTLY or wrongly, there was a widespread impression, years before the war began, among British investigators that their work did not appear as important as it should do in the German medical abstracts which were the principal means of its diffusion the world over. France felt the position even more keenly. In the current issue of the *Paris Médical* Professor G. LINOSSIER returns to a theme with which he has dealt before—namely, the scientific struggle which he foresees will occur after the war, and the means necessary to ensure a just position for French scientific work. He recalls again the "merveilleux instruments de diffusion de la pensée germanique" in the form of Handbücher, Lexikonen, Jahrbücher, Jahresberichte, Centralblätter, and Ergebnisse, to which at present France can only put up the *Bulletin de l'Institut Pasteur* and the *Journal de Physiologie et de Pathologie Générale*. He suggests, only to discard, the production of an analytical review either exclusively French or "Ententiste," generously stating that any such national *partipris* would exclude the true scientific spirit for which he is alone concerned. But the impartial review will be costly and cannot count on the *abonnements* of public libraries and such-like in the same degree as in the German-speaking countries. The only solution he can see is for the Government to subsidise a French work, capable of being substituted for the German abstracts which circulate so freely abroad.

In this country we are already doing something which is the converse of this, inasmuch as the Medical Research Committee is issuing month by month abstracts of the foreign medical press and devoting what must amount to a considerable sum of public money in the payment of competent abstractors and in procuring the large amount of paper required. Beginning with abstracts chiefly from enemy publications, the most recent numbers deal also with French, Belgian, and Italian work. Once started, a Medical Supplement such as this is likely to become indispensable, and it is difficult to think of it ever being discontinued. A similar publication in Paris would go far to realise Professor LINOSSIER'S dream. It would have the further advantage which he claims, not without justice: "car les français ont le don de la clarté dans l'exposition." That this is the case our readers may satisfy themselves on turning to the abstracts of the Société de Biologie of Paris, which we print from time to time among the proceedings of societies. Professor LINOSSIER writes:

> On sait avec quelle vaillance cette toujours jeune société lutte pour le prestige de la science française. Tout ce que Paris et la province renferment de travailleurs épris des recherches biologiques, y apporte chaque samedi le résultat de ses observations ou de ses expériences. Peu de travaux d'érudition; des faits. On a reproché aux communications d'être parfois un peu fragmentaires, un peu hâtives, mais combien elles sont vivantes dans leur brièveté! Ce sont comme des pages détachées des registres de laboratoire. Pour quelques-unes insignifiantes, qui eussent gagné à ne pas être jetées aussi vite dans la pleine lumière de la publication, combien apportent le germe d'une grande découverte, d'une féconde théorie!

We know how fertile for good has been such a "fact" as the immediate suture of the gunshot wound, for which credit is mainly due to our French confrères, and we should welcome the freest possible exchange of such "facts" at an early date, before they become elaborated into "works of erudition."

Annotations.

"Ne quid nimis."

HOSPITAL SUNDAY.

TO-MORROW will be Hospital Sunday, and there is again this year, as there has been for the last three years, a pertinent reason why the public should give ungrudgingly to the support of the voluntary hospitals of the metropolis. That reason is that many beds in these hospitals, general and special, have been placed at the disposal of the War Office on extremely favourable money terms for the use of the sick and wounded of the war. For these patients the War Office makes a capitation payment, but the prices of food, heating, lighting, and medical material have all increased so enormously that the capitation grant, though it has recently been increased, only slightly lightens the financial burden of the hospital authorities. As we have set out more fully elsewhere, the old capitation grant was 4*s*. per diem. During this year the figure has been raised to 4*s*. 9*d*., but at this rate a considerable debt is due to the hospitals, as is shown by the recent report on the subject issued by the War Office and signed by Dr. E. N. Burnett and Mr. R. Orde. It is clear that the additional burden placed by the military patients upon the voluntary hospitals has been manfully met, even if it is clear, also, that some of these hospitals are run in a less economical manner than others. We hope deeply that the public will be as generous as in previous years to the voluntary hospitals of the metropolis.

SOLDIERS' HEARTS AND BUFFER-SALTS.

THE systematic work on soldiers' hearts begun at Hampstead and continued at Colchester is now to be extended to other Army commands and to have its effect on the practice in the Army of our American ally. The work has been singularly fruitful of result and has equal application to civilian conditions. Dr. Thomas Lewis, indeed, concludes his latest study with the remark that there seems no reason for ascribing different causes for the conditions found amongst civilian and military populations apart from those which are of a purely aggravating character. The study, which is supplementary to the special report (M.R.C., No. 8) on soldiers returned as D.A.H. and V.D.H., compares patients with valvular and non-valvular affections in respect of occupation, of the history of infection, and of the occurrence of shell shock. As regards occupation the effort-syndrome occurs largely in men recruited from sedentary and light work, the proportion of non-valvular cases being a little higher. Infection plays a chief part in promoting the condition in at least 50–60 per cent. of patients of either group. Gas poisoning and shell shock figure as incidents in the history of valvular cases. Dr. Lewis concludes that the etiological factors underlying the effort-syndrome are similar whether the soldiers belong to the group "valvular" or to the group "non-valvular," the chief difference in so far as these two groups are concerned being the higher incidence of a rheumatic history in the first group. Reviewing the facts as he states them the mind naturally seeks a causative factor common to both of the groups, and this factor he finds

in the altered chemistry of the blood due to a deficiency of buffer-salts. Into the nature and mechanism of this altered chemistry we need not go here, as it was dealt with at length by Dr. E. P. Poulton in his Goulstonian lectures which are being reported in full in these columns. Dr. Lewis used as a test case certain instances of early mitral stenosis which showed a breathlessness attributed to a presumed deficiency in the circulation. Submitted to Mr. J. Barcroft for investigation, a deficiency of buffer-salts was found in each case, Dr. Lewis concluding, therefore, that altered chemistry was responsible for the breathlessness in these and probably in the majority of cases of early mitral stenosis. The mechanical importance of the damaged valve itself long clouded our judgment in regard to rheumatic affections of the heart, to the exclusion of the condition of the cardiac muscle, which was too long overlooked. It now appears as if the chemistry of the circulating fluid is a factor of at least equal importance which has been still longer overlooked and is now for the first time being appreciated at its proper value. We may liken the situation to that of a taxidriver using a faulty but repaired engine who attributes his poor speed to his repaired engine until he discovers the speed of his taxi to be as good as that of a similar taxi with perfect engine, but using also a low-grade fuel.

THE TYPHUS EPIDEMIC IN POLAND.

IN THE LANCET of Jan. 26th we drew attention to a serious epidemic of exanthematic typhus which had developed in Poland, more particularly in the Government district of Warsaw, occupied by the enemy and now being administered as German territory. The epidemic has become more serious since our last report and is still raging among the unfortunate inhabitants of that unhappy country. The disease began to develop epidemic proportions in the last quarter of 1916, during which period 2601 cases and 181 deaths were reported. In 1917 the epidemic assumed graver dimensions, especially in the Warsaw Government district, in which during the year not far short of 30,000 persons contracted typhus fever (in a population of about 2½ millions), of whom 2500 died. In the first quarter of 1918 the disease was still raging, no fewer than 16,706 cases and 1566 deaths being recorded during the three months, and in April the reported cases amounted to 5022, of which 458 proved fatal. Thus, during the 19 months from Oct. 1st, 1916, to April 27th, 1918, approximately 54,000 persons in the Warsaw district were attacked by typhus fever and 4705 of them died. The principal focus of the infection appears to have been the city of Warsaw (population 850,000), in which, during the above-mentioned 19 months' period, the attacks numbered 27,494, or nearly 51 per cent. of the total cases. Another focus was the industrial town of Lodz (population 400,000), 76 miles from Warsaw, in which 3359 persons were attacked. Up to the end of April, for which month the latest official reports are available, the epidemic showed no signs of subsiding in the Warsaw district, the reported cases still averaging about 1300 per week. In Suwalki, another Polish district, occupied and administered by the Germans, typhus fever is stated to be very prevalent, as also in the neighbouring province of Courland. In Lithuania, which is also in German occupation, exanthematic typhus is widely epidemic, and from Jan. 1st to April 13th 3711 cases were officially reported. The continued prevalence of typhus fever in Eastern Europe is not without danger to our own country; and this disease will have to be included among those upon which our port sanitary authorities must keep a watchful eye until the war has ended. Fortunately typhus fever is usually a malady of the colder months of the year, and at least some temporary diminution in the number of cases and deaths in the affected districts may be expected during the summer months.

THE IRISH MEDICAL ASSOCIATION.

THE annual meeting of the Irish Medical Association was held at Dublin at the Royal College of Surgeons on June 13th, when the chief business of the meeting was to consider a series of resolutions proposed by Dr. Leonard Kidd, of Enniskillen, declaring that the interests of the medical profession demanded that there should be one association in Ireland representative of and having the confidence of the entire profession, that a strong Irish Medical Association would best serve the purpose, and that an attempt should be made to induce every medical man in Ireland to join the Irish Medical Association. Our Dublin Correspondent last week pointed out that there are in Ireland besides the Irish Medical Association the Irish Medical Committee and the Irish Branch of the British Medical Association, each having some degree of representative character, and he indicated that of these three bodies the Irish Committee at present spoke with the greatest authority. Dr. Kidd's resolutions were intended to challenge this authority, and they led to a long and rather heated debate. An amendment, proposed by Dr. R. J. Rowlette, to the effect that steps should be taken to promote united action by the three bodies, was defeated, and Dr. Kidd's resolutions were eventually carried. The want of harmony between the Irish and British Medical Associations called into being the Irish Medical Committee, but five years later there is still no approach to united action, though there is no essential difference in the policies advocated by the several bodies concerned.

THE ALBUMIN REACTION IN SPUTUM.

IN the *Bulletin of the Canadian Army Medical Corps* for the current month Captain B. S. Cornell, C.A.M.C., records the results of a research into the diagnostic value of the albumin reaction in sputum. Some 243 cases in all were investigated at the Moore Barracks Canadian Hospital at Shorncliffe; these included not only definite and advanced cases of pulmonary tuberculosis, but also border-line cases—i.e., with suspicious clinical signs and symptoms—and many diagnosed as chronic bronchitis. The results may be summarised thus:—

Of 57 cases of chronic bronchitis, 56 gave a negative albumin reaction on every occasion. Of 73 border-line cases 64 were "positive or trace." Only 10 could be followed up, but of these no less than 5 showed tubercle bacilli in the sputum within two months. The most interesting report is that on 42 cases whose sputa always showed tubercle bacilli; only 5 gave a negative albumin test. It was then noticed that in the latter the sputum had been obtained on days when the body temperature was either normal or subnormal, and it was subsequently found that as the temperature rose the albumin reaction became positive or more marked. In cases which were afebrile throughout the result of the albumin test followed the pulse-rate. The same relation of temperature to the test was found in the suspected, border-line cases. A large number of cases with definite and marked signs of pulmonary tuberculosis but without bacilli in the sputum were also investigated, and

in one case only was a negative result obtained coincidently with a raised temperature. Pneumonia gives a positive test until crisis or lysis has occurred. Thus, according to the writer, the test gives a definite indication of inflammation of the pulmonary alveoli as opposed to that of the bronchi.

These observations confirm the growing impression that in the albumin reaction we have a valuable diagnostic aid in the doubtful cases without tubercle bacilli in the sputum, which are so often a source of difficulty in diagnosis. Captain Cornell's work impresses the importance of taking the specimen of sputum at a time when the temperature is raised. We may compare his results with some hitherto unpublished observations made by Mr. W. B. Christopherson in 1911 at the Laboratory of Clinical Research in Arosa.

Of an unselected series of 25 sputa examined, 21 gave a positive test, 4 a negative; of the latter, one was a case of influenzal pneumonia, the other three of pulmonary tuberculosis, long inactive, two of which still showed tubercle bacilli in the sputum. Nineteen of the 21 positive cases had tubercle bacilli in the sputum at the time, and the organisms were found in one of the remaining two on a previous occasion, the other being also an undoubted case of pulmonary tuberculosis. A positive reaction thus seemed to coincide with the presence of active or recently active tuberculosis. It is true that several cases contained only small amounts of albumin, in some instances a mere trace, and it was noticed that where only a trace of albumin was present it was necessary to add a large amount of saline to ensure its precipitation on boiling. Thus if 20 c.cm. normal saline were added to 5 c.cm. sputum, shaken thoroughly, a few drops of acetic acid added, and filtered, the filtrate occasionally failed to cloud on boiling; if 50 c.cm. saline were used a haze of albumin came down.

Possibly some of Captain Cornell's negative results during an afebrile period might have shown a trace of albumin if the test had been applied in a greater degree of dilution, and Mr. Christopherson's series might have been helped by closer attention to the patient's temperature chart. The test is certainly of diagnostic value and it has the great merit of being quickly and easily performed.

PHLEBOTOMUS FEVER.

THE *Phlebotomus papatassii* is found chiefly on the shores of the Mediterranean. It is a semi-transparent, yellowish fly, the females the larger, browner, and more opaque because more hairy. The flies specially dislike wind, so they are not found on the hills, even as low as 600 feet. They dislike bright light and complete darkness. Yet they hide themselves in holes. In houses they may cover the walls "as if sown." The female bites especially in the gloaming and at dawn. It makes many punctures, and after several suctions becomes sluggish, so is easily caught in the morning or destroyed. The flies bite through linen. Thick socks or gloves probably protect. And so does fine gauze; ventilation is necessary as well, for in an ill-ventilated room they can creep through a gauze-mesh, but they cannot pass if there is a draught. The floor of a hut should be concreted, as they come out of holes in the ground. They dislike cigarette smoke and alcohol fumes, so it is not surprising that the Turks smoke numerous cigarettes. Dr. Brack,[1] who served with a German detachment in Turkey in 1916, noted that—

In May there were none of these flies, but four cases of three-day fever occurred. The flies and the cases became very numerous in June, July, and August, but ceased by mid-September, when the flies disappeared. These cases seriously diminished the battle-worthiness of the troops. The flies were very troublesome. The individual sting is painful, but, in fact, the stings were so numerous as quite to prevent sleep, and men's faces swelled up out of knowledge. Sometimes a vesicle would form, sometimes even a blister. In one case the numerous blisters were filled, not with serum, but with blood. All Dr. Brack's men got the fever. Incubation four to ten days. Rapid pyrexial onset; fall by lysis usually in two or three days. The highest pyrexia occurred among men working in the sun. The fever was disabling and was followed by great desire for sleep, weakness, headache, and loss of appetite, constipation usually, sometimes diarrhœa, which might even be bloody. No exanthem, but a conjunctivitis very frequent, rarely purulent. Patient usually laid aside for ten days and relapses occur. Generally the fever is lower the second time. As to *treatment*, and first as to prophylaxis: A skilful medical officer should advise in the choosing of a camp, on a site lying high, exposed to the prevailing winds, and, if possible, on the reverse slope of a hill, so as to be protected from the enemy. The horse-lines should be far from the men's tents. The best treatment is to leave the patients at rest, little disturbed by questions, only a few words of encouragement given them. Keep their surroundings quiet and free from flies. Encourage sweating, by fomentations to the chest, hot tea, and 30 gr. aspirin. Calomel, 4 to 6 gr., is useful, and opium if diarrhœa is severe and with blood. Zinc does no good to the conjunctivitis, hot sand-bags are useful for the muscular pains, and invaliding home is required if debility is severe. The disease may become chronic unless the medical officer treats it energetically. Immunity is not acquired. As to *differential diagnosis*: Malaria never came in question here, though many blood smears and deep drops were examined; anopheles were never found in the camp. Dengue was considered, but there was no eruption on the third day, nor were there joint pains, nor bronchitis, and dengue began later in the year usually. Dysentery never occurred in the camp, so what diarrhœa occurred was due to the phlebotomus fever. Each case required complete examination. The epidemic commenced among men on stable guard, and there was a short illness epidemic among the horses at that time; two days of fever, with marked subsequent debility, no diarrhœa; but though these flies were prevalent, they were never noticed to settle on the hairless regions of the animals.

Dr. Brack hopes to be able to protect his men from the flies on these lines in another year.

[1] Arch. für Schiff- u. Tropen-Hygiene, December, 1917.

Dr. Norman Moore, the President of the Royal College of Physicians of London, and Mr. F. W. Pember, Warden of All Souls College, Oxford, have been elected Radcliffe Trustees in the places of the late Earl Jersey and the late Sir William Anson.

THE post-graduate course of instruction on War Neuroses and Shell Shock at the Maudsley Neurological Clearing Hospital will be held at Denmark Hill on Tuesdays and Fridays, beginning June 25th, at 3 o'clock, and will continue for six weeks. Applications to attend the course should be made to Lieutenant-Colonel F. W. Mott. No fees are charged, but at the request of the Director-General of the Army Medical Service civilian practitioners are requested to bring a letter of introduction from a hospital physician or surgeon.

THE proposal to endow a bed in the Royal City of Dublin Hospital in memory of the late Lieutenant-Colonel Henry Moore, D.S.O., R.A.M.C., who was student, house surgeon, and visiting surgeon there, has met with a ready response from his friends and pupils. Those willing to assist in organising this fund are asked to communicate with Mr. G. Jameson Johnston, professor of surgery, at the hospital.

IN an Amending Order dated June 15th the Board of Trade have relaxed the motor fuel restriction in regard to hired vehicles in the sense of permitting a journey for any sudden or urgent necessity where life or limb is endangered, as well as the conveyance of sick or injured persons to or from hospital or nursing home and from house to house. A motor vehicle may also be hired for the purpose of paying a visit to a person who is dangerously ill. Journeys such as these have now been officially distinguished from joy-riding.

INTER-ALLIED CONFERENCE ON THE CARE OF DISABLED SAILORS AND SOLDIERS.

THE Second Inter-Allied Conference on the Care of Disabled Sailors and Soldiers was held at the Central Hall, Westminster, on May 20th to 25th, with the Rt. Hon. JOHN HODGE, M.P., in the chair. The exhibition was opened by H.R.H. the Duke of CONNAUGHT, and visited by their Majesties the King and Queen, accompanied by Princess Mary. During the week Princess Beatrice paid a visit; the final ceremony was performed by H.R.H. the Duke of Connaught.

In honour of the Allied delegates a dinner was given by the Lord Mayor at the Mansion House, and afternoon entertainments by Sir William Younger, followed by an official dinner. Visits were paid to Richmond, Walton-on-Thames, and Brighton; institutions were visited at Roehampton, St. St. Dunstan's, Golders Green, Shepherd's Bush, and the delegates went also to Battersea Polytechnic to see the work of the local War Pensions Committee.

THE SURGICAL SECTION.

A striking feature of the Conference was the kinematic operation of Professor V. Putti, director of the Rizzoli Institute at Bologna, whose work is largely based on the theoretical considerations of Dr. Giuliano Vanghetti. We published last week a clinical lecture by Professor Putti dealing with the method, and a special article bearing on it, and need therefore only add here the briefest summary.

The principle is that movements of the muscles of the stump are utilised in special ways to move the different parts of the artificial limb, making it more alive—in the language of the Conference, the prosthesis is vitalised; this end is attained by the formation of plastic-motors in the form of clubs, loops, or club loops. In the forearm, for instance, the flexor and extensor muscles are covered separately by skin and project beyond the general surface of the stump. At the base of the two clubs thus formed are fastened celluloid rings which actuate chains and bring about flexion and extension of the artificial hand. In an amputation of the lower part of the thigh a club loop is formed. By a special plastic operation a canal lined with skin is formed through the muscles; through this a rod is passed. A strap fastened to each end of the rod replaces the tendon of the quadriceps. A man with this form of amputation can stand on his artificial limb alone.

Early Education of Muscles of Stumps.

Another valuable communication was that of Dr. MARTIN (Belgium), who advocated early education of the muscles of a stump; on the day following amputation he persuades his patients to move their stumps. For amputations of the arm he prefers actual work with tools to mechanotherapy; work can be more accurately graduated. This method of treatment develops the power of sensation in a stump. Zones of anæsthesia are, perhaps, due to some impression made upon the nerve centres while operating but more research is necessary on these points. Earlier coöperation between the surgeon and the makers and fitters of artificial limbs was needed.

Dr. GOURDON (director of the Technical School for the Disabled at Bordeaux) had seen men with stiffness of the shoulder-joint and pectoral muscles, for whom work with tools had not been enough; it had been necessary to fall back upon mechanotherapy. He believes in re-education of the sensation of stumps and gives his patients special exercises to this end.

The conclusions of Dr. Martin received the general support of the chairman of the Surgical Section, Sir ALFRED PEARCE GOULD.

Partial Amputation of the Foot.

A useful paper, based on 618 partial amputations of the foot, was communicated by Dr. RIPERT, of St. Maurice (Seine). He considered the surgeon, if possible, should perform an astragalectomy, subastragalian, or Lisfranc's operation; if one of these three operations were impossible he should follow Patel's advice and sacrifice a foot which would only give rise to pain. 545 of his patients had been able to walk on their sole or heel with a more or less ordinary boot.

Dr. L. NOVÉ-JOSSERAND (Lyons) agreed with these conclusions; although at first doubtful as to the value of Chopart's operation, he had seen men who walked quite well afterwards.

Dr. MARTIN (Belgium) spoke of the excellent results he had seen following a complete removal of the foot; the men had been able to walk over 25 kilometres without fatigue.

Treatment of Wounds by the Continuous Bath.

Major G. SANDES, of the South African Hospital, Richmond Park, read an interesting communication on the Treatment of Wounds by the Continuous Bath. Men with suppurating wounds of the limbs or septic amputations were suspended on hammocks dipping into ordinary slipper-baths. Weak antiseptics are added to the bath water to prevent rashes. The men are made comfortable by means of bed-rests and pillows. Carrel's system of irrigation tubes is used when indicated. An electric device registers the temperature of the water in the mains: a bell rings if the water is too hot, a buzzer if too cold. The average duration of stay in the bath is 7½ days. The advantages claimed are that no dressings are required, the patient is saved pain, and the doctors and nurses are freed for other work.

British Arrangements for Military Orthopædic Cases.

The British arrangements for military orthopædic cases were explained by Colonel Sir ROBERT JONES, C.B. He commenced by saying that military orthopædic surgery which arose out of principles adopted for the treatment of crippled children had expanded into a huge organisation of the first military importance with two ends: first, that of curing the soldier still capable of fighting; secondly, of making a productive unit of the man too severely injured for further military duties. Although of a necessity the men are retained at the orthopædic centres for a considerable time, over 70 per cent. have been returned to the Army as fit for duty. To expedite cure suitable cases are now being brought from overseas direct to orthopædic hospitals. Treatment is being stimulated by propaganda; command depôts are visited monthly by orthopædic surgeons and the doubtful cases discussed. Suggestions dealing with prevention of chronic disabilities have been drawn up by consultants and sent to the various hospitals all over the country. The work for limbless men is being decentralised; not only are separate hospitals in working in Scotland, Ireland, and Wales, but it has been decided to start fresh centres for the supply of artificial limbs under the joint control of the War Office and Pensions Ministry in connexion with the orthopædic centres at Liverpool, Leeds, Manchester, and Birmingham.

THE MEDICAL SECTION, INCLUDING THE BLIND AND THE DEAF.

The work of the Medical Section was opened by a paper by Sir JOHN COLLIE, Director of Medical Service to the Ministry of Pensions, who stated that the principle guiding the treatment at Golders Green was to use every effort to change the patient from a morbidly introspective man to one of normal mental outlook. The value of work as a remedial agent cannot be over-emphasised. Carpentry has proved the most popular form of it. The patients must take a personal interest in the welfare and tone of the institution; if a man resents treatment (and such cases are not uncommon owing to the nature of their disease) they must be removed. Hypnosis was of very little value in the treatment of shell shock, and has been replaced by a system of re-education; the man is encouraged to make the necessary effort first with and later without assistance, just as one might teach a child to walk. Real and enduring cures take several weeks. For men following their employment a clinic for out-patient treatment of neurasthenia has been established with satisfactory results at Lancaster Gate, W. The Ministry hopes to have a clinic for psycho-therapeutic treatment in most of the large towns. Sir John Collie, in answering questions, pointed out that neurasthenia is a passing functional condition on which persuasion, discussion and analysis have a striking therapeutic effect. An Army Council instruction has recently been issued announcing the decision that in all cases where a soldier suffering from shell shock or neurasthenia is about to be discharged a neurologist shall sit on the board.

Neurological Cases.

Dr. VILLARET read a paper on the work carried out at the Neurological Centre at Montpellier. The French, early in the war, systematised the treatment of nerve cases; the centre at Montpellier was formed in the autumn of 1914. Neurological hospitals were formed close up to the fighting line

(Service de l'Armée). A large number of men were treated there without having to go back to the base hospitals (Service de l'Intérieur). At the base the organic and functional cases are rigidly separated. The centre has dealt with 20,000 cases, of whom 60 per cent. have been able to return to the Army; of the 40 per cent. discharged all have been trained. M. Villaret insists on the necessity of medical control going hand-in-hand with occupational training. Every man who enters a neurological hospital should, as early as possible, be fitted with an apparatus and continue with the work to which he had been accustomed. Appliances for musculo-spiral paralysis should not hinder the man's work; the palm of the hand must be free and not full of splint.

Dr. DESTIN (Belgium) in his paper held that neurological cases should, as early as possible, be concentrated in special hospitals under specialists. Men, after operations on nerves, require a very long period of care, amounting possibly to four years. A nerve is left in an extremely delicate condition after operation; a man apparently cured by operation may have all the benefit undone by jarring his elbow against a door-post or by some other trifling accident.

The central idea of the Italian papers by Professor MEDEA, Professor GOLGI, and Professor GUIDO SALA was that there should be very close coöperation between the physician and the orthopædic surgeon until a relatively advanced stage in the patient's career.

Training and After-care of Blinded Soldiers.

At the meeting dealing with the blind M. VALLON read a paper on the work in France. The French blinded soldier is usually an agriculturist. After the preliminary hospital stage the men are passed on to places of re-education, which in large countries like France (and Italy) are necessarily scattered about the country. Having returned to his home, the blinded ex-soldier is looked after, not as with us by the State, but by private societies, some of which are possessed of considerable means and are able to provide him with a sum of money to set up house when he marries and to devote some care to his children. Besides the trades usually taught in this country the blind are enabled to make parts of motors with great accuracy. Cooperage is highly developed; they even make glass flasks and bottles; the polishing and cutting of glass stoppers are done with great exactness. In some of these trades the blind men trained during the war are already earning in the open market wages equal to those of sighted persons.

Sir ARTHUR PEARSON read a valuable paper on Life at St. Dunstan's.

The main conclusion of the communication of Dr. LAVINIA MONDOLFO (Milan) was that the blinded soldier should go out into the world to work and live among sighted men.

The Care of the Tuberculous Soldier.

Major P. HORTON-SMITH HARTLEY read a paper on the Care of the Tuberculous Soldier. Up to the end of last year 20,000 men have been invalided from the British Army through this disease, and as the war continues the number will be largely increased. Great care should be exercised in the examination of recruits, histories of previous pleurisy and hæmoptysis must be carefully investigated, the assistance of tuberculosis officers and others with special experience should be invoked when necessary. In the Army a careful watch should be made for early cases; when signs of lassitude, cough, and wasting appear in a man his temperature should be registered and his sputum tested many times. While a man is at the sanatorium allowances are made to his family at the maximum rate of pension. After leaving the sanatorium the environment of the patient should be changed whenever possible; a clerk, for instance, may return to his clerical work, but should obtain, if possible, a post in the country or at the seaside. A proposal is now being considered by the Ministry of Pensions and the Local Government Board to provide more health visitors. There is no objection to special provision being made in fever hospitals for tuberculous patients; no single case of infection has occurred. Such provision would be useful for chronic cases during pyrexial attacks. Accommodation for advanced cases is being provided by the Metropolitan Asylums Board and the existing institutions in the provinces; in some instances small pavilions to accommodate 12 beds each are being erected. Such patients should be fairly near their homes, where they can see their friends from time to time. As an experiment five farm and training colonies are being started for definitely tuberculous patients—viz., at Kinson, near Bournemouth, by the Y.M.C.A.; at Papworth Hall, near Cambridge; at Delamere Forest, in connexion with the Liverpool Sanatorium; at Walkington, near Hull; and at Polton, near Edinburgh.

Lieutenant HOWARD, who represented Major GANT, the Commandant of a Prisoner of War Camp, advocated the conversion of camps into sanatoria for early cases by the employment of the labour of prisoners of war. Fort Talbot, in Glamorganshire, had been suggested as a suitable place to start this work.

Lieutenant NERINO RASPONI described the system for dealing with tuberculosis in the Italian Army. He mentioned the prevalence of tuberculosis among the Italian prisoners returning from Austria. In Italy the Ministry of War looks after the patients for the first six months of their treatment and then they are passed over to the civil authorities; while in sanatoriums a pension is given to their wives and families.

In each department of France, M. VALLON explained, a committee had been formed to look after tuberculous ex-service men. The authorities hoped shortly to take steps to promote education in the work in civil life most suited to them.

Lip-reading for Discharged Deaf Soldiers.

Major J. DUNDAS GRANT dealt with the state of the deaf man after he had been discharged. The numbers of the really deaf are comparatively few; their difficulty in obtaining paid work is not very considerable. In spite of every effort, deafened men are not coming forward as they might to receive the necessary education in lip-reading. The Ministry of Pensions has appointed a Special Aural Board (of which Major Grant is president), consisting of five aural surgeons and a specialist in instruction in lip-reading; in the different areas of England, Scotland, and Wales aurists and lip-reading specialists are acting on behalf of the Ministry. The board looks upon three months as the proper duration of an ordinary full course. Dr. A. Eichholz, of the Board of Education, has evolved a practical set of categories to classify the results obtained by the lip-reading classes. Instruction has been given in lip-reading at the headquarters of the board at 28, Park-crescent, W.; other classes have been formed in London, Manchester, Brighton, Exeter, Reading, Bristol, Bradford, and Plymouth. Schooling is made agreeable by investing the headquarters with many of the characters of a club; good meals are provided at rather under cost price. No man's pension is diminished because he has learned lip-reading. For treatment of men able to work special clinics have been organised, open once a week in the evening. The work involves questions of diagnosis of the utmost delicacy; functional deafness is, since the war, understood much better than formerly. The eligibility of men for learning lip-reading is best dealt with by the aurist and lip-reading specialist working in conjunction. All men with deafness of functional origin must be excluded and handed over to the neurologist or psychiatrist. As a rough-and-ready rule the degree of deafness requiring lip-reading instruction should be such that ordinary conversation cannot be heard further than one foot or loud conversation further than three feet. The spontaneous acquisition of lip-reading to a greater or less extent indicates a high degree of deafness and promises considerable success; a reasonable amount of intelligence and nerve-power must exist. Our first duty, of course, as Sir Alfred Keogh emphatically insisted, is to cure the men by any means if possible. To help towards uniformity of assessment Major Grant has drawn up a provisional scale:—

	Percentage of total disablement pension awarded.
(1) Total deafness both ears	70
(2) Total one, nearly total other (shout close to ear)	60
(3) Extreme both (shout from 1 to 2 ft. off on both sides)	50
(4) Total one, moderate other (loud voice 9 ft. off)	40
(5) Extreme one, moderate other	30
(6) Total one, normal other	20
(7) Moderate, both or either	Under 20*
(8) Incapacitating vertigo	50–60

* For gratuity.

Each case of "incapacitating" vertigo should be taken on its merits in the light of the frequency, severity, and genuineness of the attacks. Such men would generally be

recommended to come into the hospital for observation and treatment. As regards pre-existing disease of the ear, if the man was originally passed for service and his hearing is now incompatible with military service, the board assumes his disability to be attributable to (or, at all events, aggravated by) military service in the absence of any other obvious cause.

MEDICAL SERVICE OF BRITISH MINISTRY OF PENSIONS.

In the Medical Service of the British Ministry of Pensions during the last few months much progress has been effected. Extensive arrangements have now been made for orthopædic treatment. The Ministry has utilised its liberty to erect annexes to existing military orthopædic hospitals for the accommodation of discharged men. The patients in the annexes will be under the care of the military medical staffs of the main hospital and have the use of all the orthopædic equipment there provided. Arrangements are being made for the institution of 13 annexes attached to existing military orthopædic hospitals, each containing about 100 beds; 11 of these annexes to be in England, one in Scotland, and one in Ireland. The Ministry has also taken over the whole of the Manor Hospital at Hampstead (102 beds) for the treatment of orthopædic patients in London with a small out-patient department attached. At the Royal National Orthopædic Hospital, where workshops are being erected, 150 beds have been allocated to the Ministry of Pensions for the use of discharged soldiers. A massage board is in process of formation; its duties will be to supervise the qualifications of masseurs and masseuses and arrange for their distribution in areas where their services are required. For the treatment of shell-shocked men who have contracted the habit of stammering a special centre has been opened in connexion with the Psycho-Therapeutic Clinic at 80, Lancaster Gate. Seven special institutions are available in England and Scotland for the care of 250 discharged men suffering from epilepsy; arrangements have been made at farm colonies for the reception of discharged patients. Extensive accommodation has been made for paraplegics; it is intended that hospitals containing from 20–25 beds shall be open in every county, or at least in every pension area throughout the country, for the reception of these cases. The provision for tuberculosis has been mentioned above. For men coming from the East with tropical diseases arrangements have been made with large general hospitals in various parts of the country provided with special departments for the treatment of tropical diseases. At the Hospital for Facial Injury at Frognal an extra hut with 25 beds will shortly be at the disposal of the Ministry. Special arrangements have been made for the reception of invalided officers. 624 medical referees have been appointed. Each area has a medical referee to whom cases can be referred, and medical referees are now being appointed in Ireland.

THE TRAINING SECTION.

Without adding much to our common sum of knowledge the meetings of the section on training served to ventilate the views of authorities both in the United Kingdom and the Dominions. Many of these views were expressed with force and eloquence.

The excellent work of Dr. BOURRILLON, President of the Permanent Inter-Allied Committee, is already well known in England; his suggestions come therefore with considerable force. His paper emphasised the point that the number of schools for re-education should be limited; small schools were organised, as a rule, by people who were desirous of helping the men but devoid of a thorough knowledge of their real interests. A larger number of advanced schools should be established, corresponding with the English secondary schools or even universities. Inter-Allied schools could with advantage be formed to enable the disabled soldier of one nation to live among those of another Allied country.

What are we to do for our one-armed men and men suffering from cardiac and respiratory lesions? Mr. DUDLEY MYERS (Roehampton) said that we are always up against the problem of the personal question. It is not so much what a man can do as what he will do and what his employers will allow him to do. Sooner or later we shall have a large State-aided industry for the employment of one-armed men with various forms of machinery adapted to their use. But we may eventually be compelled to establish State workshops for other kinds of disablement as well, especially those of a medical character, unless Lord Roberts' Memorial Workshops, which are doing excellent work, can supply the needs of the men in this respect.

Considerable unanimity was expressed on the desirability of providing occupational training during convalescence. The patient has leisure to plan his future life's work. His choice of an occupation is facilitated by seeing various work undertaken successfully by his fellows; he lives in an atmosphere of work which soaks into his very being, and so by the genial and stimulating fellowship of his comrades he gradually becomes accustomed to regular working hours and on discharge both his mind and body are prepared to profit by the further training available. Several of the British and Dominion delegates favoured the allocation of certain hospitals at different centres to convalescent men unfit for further military service; at these hospitals vocational training should be provided. Whether this be possible or not rests, of course, with the authorities.

There was also a measure of agreement as to the desirability of the State allocating certain occupations, such as switchboard work, to one-armed men, rather than allowing women to take up a work not pre-eminently suitable for them. Another principle on which general agreement ruled was that the teacher should be associated with the medical man in advising the disabled soldier as to his choice of an occupation; the brilliant results obtained at Port Villez bear out this contention.

Sir WILLIAM YOUNGER (Dumfries) held that afforestation would be a great factor in the future of this country. Small holders could in the winter-time do work in the forest—road-making, fencing, draining the land, and other similar work. For their sons and daughters good outlets in skilled occupations would be available.

Mr. HENRY DALTON announced that the Ministry of Labour has arranged with the War Office for officers passed as unfit for general service for six months to apply for a course of training in professional, technical, and general business subjects.

THE PENSIONS SECTION.

In the Pensions Section the chairman, Sir ARTHUR GRIFFITH-BOSCAWEN, made out a good case for the work of the Ministry. Whatever be the merits or demerits of the British pensions system in other respects, a permanent pension once granted is not reduced by an increase in the man's earning capacity. Delays have been inevitable in carrying out a vast and exceedingly difficult task. The Pensions Ministry are dealing with about 18,000 cases a week, of which some 7000 relate to disabled men, the rest being widows and dependents. To prevent delay the amount of the pension is fixed as promptly as possible in the first instance, an appeal being allowed to follow. Of every 100 cases dealt with by the Ministry, probably 98 were dealt with successfully; very little credit, the chairman complained, was given them for the 98, but much was heard of the two unfortunate exceptions.

Mr. C. J. MATTHEW, the vice-chairman, stated that British pensions were based on two principles: first, an actual monetary recompense for the injury, identical for the skilled man or labourer; secondly, the giving back to a man of his earning power, by far the more important part of his pension. The watchmaker with one finger off, and thus rendered useless for his own trade, is taught another; if he refuses training he must take the same compensation as the labourer.

Mrs. BROADBENT (Brighton) asked for sympathetic consideration of men who manifested signs of tuberculosis subsequent to their discharge from the Army. In reply, Sir ARTHUR GRIFFITH-BOSCAWEN said that when there was any considerable service in all probability the pension would be raised.

A Delegate suggested the formation of an international committee to devise a pension scheme based on an international foundation; such a committee would arrange the rate at which a man's pension should be paid if he made his home in another country where the cost of living would be different. A most important matter mentioned was the necessity of a comprehensive scheme for insurance of the disabled against accidents when at work. Unrestricted admission of disabled men into all Inter-Allied countries, including the Dominions, was advocated.

(*To be continued.*)

THE CONTROL OF VENEREAL DISEASES.

Recent Books on Prevention.

Dr. Otto May, in *The Prevention of Venereal Diseases* (Oxford University Press. 1918. Pp. 240. Price 7*s.* 6*d.*) writes with authority as late honorary secretary of the National Council for Combating Venereal Diseases, which has done so much to focus attention on the magnitude of the evil, and to deal with it on educational lines. Venereal diseases may, however, be approached from the side of preventive medicine, and on the question of personal prevention by means of prophylactic outfits Dr. May parted company with the Council, believing, as he does, that "the campaign against these diseases will never be brought even to an approximately successful issue so long as the assistance of this legitimate and valuable ally is deliberately declined." Chapter IV. is devoted to a clear and well-weighed statement of this position which has frequently been debated in this column. Other chapters deal with: Education and Instruction; Treatment in Relation to Prevention; Prostitution and Venereal Disease; Venereal Disease and Marriage, and in an appendix are given a list of institutions available for free treatment, the text of the Venereal Disease Act, 1917, and a lecture frequently delivered by the author to troops, containing what is desirable for them to know in regard to prevention and treatment. We commend Dr. May's book to the thoughtful study of the medical profession, and especially to the staffs of venereal clinics. Upon publication the author called attention to an oversight which he rightly desires to remedy immediately. The City Corporation Clinic in conjunction with St. Bartholomew's Hospital was by an oversight omitted from the list of treatment centres established under the scheme of the Local Government Board. The centre in question was among the earliest to be opened.—*The Third Great Plague* (W. B. Saunders Company. 1917. Pp. 204. Price 6*s.* 6*d.*). Dr. John H. Stokes, who is chief of the section of dermatology and syphilology at the Mayo Clinic, discusses syphilis for every-day people, putting the accepted facts in a form to become matters of common knowledge. After dealing briefly with historical matters, he describes in turn the nature and course, the treatment, and the transmission and hygiene of syphilis. In a final chapter on Public Effort against Syphilis Dr. Stokes describes the "studies of the Sydenham Royal Commission, on whose findings the British Government is now undertaking the greatest single movement against syphilis and gonorrhœa that has ever been launched." He regrets the backwardness of the United States in this movement. —Dr. Edward B. Vedder in *Syphilis and Public Health* (Lea and Febiger. 1918. Pp. 315. Price $2 25) writes with the status of a senior officer in the U.S. Army Medical Corps who has had a long period of active service with troops, followed by four years of continuous experience with the laboratory side of the problem. He deals successively with the Prevalence of Syphilis, Infection and Transmission, Personal Prophylaxis, and Public Health Measures, bringing in each case both figures and careful judgment to bear on the questions. Colonel Vedder regards fear as a very poor deterrent of possible venereal infection:—

> The fear of hell did not make men moral even in the not very remote past, when the belief in a real physical hell was very vivid. If the fear of hell itself had so little deterrent effect, how can we suppose that the distant prospect of a possible venereal infection would act as an effective deterrent?

But he does not think that venereal prophylaxis can be applied in civil life with the same prospect of success as in the Army.

Salvarsan Substitutes.

The Local Government Board has now approved of the drug neodiarsenol as a substitute for salvarsan. Supplies of this drug can be obtained by local authorities and the authorities of hospitals direct from Mr. G. R. Brown, 15, Edmund-place, Aldersgate-street, London, E.C. 1, the price for a dose of 0·15 g. being 9*d.*, of 1·5 g. 7*s.* 6*d.*, and intermediate doses in proportion.—In a recent number of the *Journal of the A.M.A.* Dr. Sargent, of Milwaukee, relates four cases in which alarming toxic symptoms developed after the use of arsphenamin ostensibly manufactured by the Farbwerke-Hoechst Company in U.S.A. under the trade name "Salvarsan." The most striking symptoms were faintness, cyanosis, and air-hunger. He hopes to save others from repeating his uncomfortable experience.

Correspondence.

"Audi alteram partem."

IN MEMORY OF LISTER.

To the Editor of THE LANCET.

SIR,—"P. D." has no doubt forgotten that in 1912 a strong committee was formed at the instigation of the Royal Society and the Royal College of Surgeons of England to raise a fund for a memorial to Lister. Between £9000 and £10,000 were collected from subscribers not only in Great Britain, but in the Dominions and in other countries. A small part was expended on the medallion by Sir Thomas Brock, now in Westminster Abbey, but the decision as to the disposal of the remainder was by common consent postponed on the outbreak of the war. Some of the active members went abroad and others were too much occupied with more urgent matters to devote their attention to this subject. No one at that time expected that the war would last so long. I do not think that it would be possible during the present crisis to call the committee together.

I may add that the foundation and endowment of an oration or lecture was one of the schemes that met with considerable support in the committee, and that it is more than probable that some day this will be carried out.

I am, Sir, yours faithfully,

June 17th, 1918. RICKMAN J. GODLEE.

LYMPHOCYTOSIS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—The note published by Captain D. L. Tate and Captain J. W. McLeod in your issue of April 27th has forestalled me. For the past nine months I have been working on the blood condition, more especially on the differential blood count, in cases of P.U.O., D.A.H., and trench fever. I have now collected over 200 cases and about 400 total and differential blood counts.

From the result of my work, which I hope to publish soon, I am able to state:—

1. That a polymorphonuclear leucocytosis is characteristic of the periods of pyrexia in the relapsing type of trench fever.
2. That the leucocytosis is not always proportionate to the height of the temperature.
3. That during the period of apyrexia, before and after the elevation of temperature, the blood shows an excess of cells of the mononuclear class, more especially of the lymphocyte (small and large) series.
4. That the degree of relative lymphocytosis is a useful criterion to the degree of "intoxication" from which the patient is suffering.
5. That the highest percentages of lymphocytes are to be found in cases of D.A.H. occurring during convalescence from trench fever infection.
6. That a certain proportion of cases with no symptoms of pains in the limbs, but which had symptoms referable to disease of the lungs, bronchi, stomach, or larynx, showed mononuclear excess.
7. That the large mononuclear and transitional cells have been found relatively increased in some cases.

From the notes given by Captain Tate and Captain McLeod no information is given as to the type of cases of trench fever examined—a point of considerable importance.

I am, Sir, yours faithfully,

JOHN B. MCDOUGALL, M.D. Glasg.,
Captain, R.A.M.C.

A General Hospital, B.E.F., France, May 16th, 1918.

SEXUAL PERVERSION.

To the Editor of THE LANCET.

SIR,—My long experience of mental diseases permits me to write with definite knowledge on the subjects discussed in the course of the unsavoury trial of Mr. Pemberton Billing. I venture to state that sexual perversion requires to be definitely differentiated. Perversion in both sexes has been an unpleasant but a necessary matter of study by all psychologists, who not only have to often treat the results of these habits, but have to give evidence in courts of law on such matters.

It is known that in other countries, and especially in Germany, these perversions have been long existent, and it is believed that they have been on the increase of late years. I take it that these should be classified under distinct headings.

1. The perversion caused by insanity, as evidenced in some cases of general paralysis of the insane, in cases of dementia præcox, and in cases of the weak-minded. The perversions in the latter class are often of the most extraordinary character.
2. The inherited perversion.
3. Accidental perversion, caused by a change in the sexual feelings after accidents to, or operation on, the organs in the abdominal cavity, and no doubt due to some change in the ganglionic or sympathetic nervous system, or the result of alcoholism plus an abnormally high blood pressure, and often associated with an early arterial sclerosis.
4. The result of jaded and worn-out normal sexual feelings.
5. The result of fear of the consequences of normal sexual intercourse in both sexes. Our declining birth-rate proves the existence of this, and there is here an association with Lesbianism.

Attempts have been made in several countries and for many years to get sexual perversions considered as no criminal offence, and even to prove that these perversions are really more moral than the natural normal sexual act. I think legislation should deal more stringently with cases which do not come under the classes 1 and 3, where the offenders should be considered as irresponsible, and cases for care and treatment, rather than punishment.

I am, Sir, yours faithfully,

Bournemouth, June 7th, 1918. LIONEL A. WEATHERLY, M.D.

SMALL-POX IN LONDON.

To the Editor of THE LANCET.

SIR,—The accompanying table is of interest in view of the recent reappearance of small-pox in the London area. The

Year.	No. of cases.	Year.	No. of cases.	Year.	No. of cases.	Year.	No. of cases.
1884	6363	1893	2376	1902	7916	1911	70
1885	6164	1894	1117	1903	355	1912	5
1886	99	1895	941	1904	449	1913	1
1887	56	1896	190	1905	53	1914	1
1888	63	1897	70	1906	27	1915	11
1889	5	1898	5	1907	2	1916	1
1890	22	1899	18	1908	1	1917	0
1891	63	1900	66	1909	15	1918	41*
1892	325	1901	1743	1910	5		

* For first six months of the year.

table is divided into consecutive periods of nine years. The figures are taken from the annual reports of the Metropolitan Small-Pox Hospitals during the last 34 years and represent definite cases of small-pox in which the diagnosis has been confirmed. The table shows the rise and fall in the number of patients treated throughout each period, and is so arranged that the maximum year of each period appears at the head of the column. It seems reasonable to expect that in 1920 another maximum will be recorded. Will it follow the precedent of 1902 or that of 1911?

I am, Sir, yours faithfully,

Joyce Green Hospital, Kent, June 15th, 1918. A. F. CAMERON.

METHODS OF GENERAL ANÆSTHESIA IN FACIAL SURGERY.

To the Editor of THE LANCET.

SIR,—With reference to the interesting article on this subject by Lieutenant R. Wade in THE LANCET of June 8th I would like to mention another method which should not be lost sight of—namely, preliminary tracheotomy and anæsthetising through tracheotomy-tube. I have used this method several times in the worst types of jaw cases and consider it is the best for cases with comminution of the mandible, laceration of the soft parts, and when the field of operation includes the oral cavity. These cases are usually acutely septic and the risk of septic pneumonia is very great. The technique is as follows:—

A preliminary tracheotomy is done preferably with local anæsthesia and the tracheotomy tube inserted. A small wire mask covered with gauze, and specially made for the purpose, is placed over the tracheotomy tube and tied with tapes round the neck. Anæsthesia is now induced by dropping chloroform on the mask, and when the patient is under it is continued by leading a tube under the mask and pumping in chloroform vapour either through a Junker or a Shipway's apparatus. A tube from the oxygen cylinder may also be led under the mask, but is seldom required. Before the operation is begun the fauces is carefully packed with gauze.

In this way we have a free airway in any position of the patient, the anæsthetist is removed from the field of operation, and the risk of blood or septic matter reaching the lungs is practically *nil*.

The tracheotomy tube may be left in for 24 hours after the operation.

The only disadvantage is that it involves an additional operation and more care in the after-treatment, but with its many obvious advantages it is difficult to understand why it is not more extensively used.

I am, Sir, yours faithfully,

T. LOVETT,
Captain, R.A.M.C.; late Anæsthetist at a General Hospital, B.E.F.

June 14th, 1918.

A NATIONAL MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—Perhaps you will permit me to reply as briefly as possible to Dr. M. Hamblin Smith's criticism in your issue of June 8th. The *compulsion* under Surgeon-Major Dill's scheme works out as follows:—

1. Every member of the public is to be compelled, ex hypothesi, to pay for this State Medical Service whether he wants it or not. Therefore he cannot go to an independent practitioner outside the scheme, unless he is prepared to pay twice over for medical services.

2. The independent practitioner of medicine will find that only a small proportion of his patients, the wealthy ones, are able and willing to pay twice over. He will not be able to live on these alone, and if he stays out of the scheme he will starve. Starvation is quite a useful means of *compulsion*, as I believe the Germans have found in dealing with their prisoners of war. Therefore he will have to come into the scheme, and even the comparatively wealthy people, prepared to pay twice over, will usually fail to find an independent private practitioner.

This is practically the way compulsion came in under the National Insurance Acts. It was not universally effective, owing to the income limit, but under the "State Medical Service" outlined by Surgeon-Major Dill there will be no income limit. All classes are to be compulsorily insured.

I am, Sir, yours faithfully,

Hampstead, N.W., June 16th, 1918. HENRY SHARMAN.

URBAN VITAL STATISTICS.

(Week ended June 15th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality further declined to 11·4, against rates decreasing from 15·0 to 11·5 per 1000 in the five preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 11·0, or 0·2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4·4 in Southend-on-Sea, 4·6 in Enfield, and 5·7 in Walthamstow, to 19·1 in South Shields, 22·4 in Sunderland, and 25·0 in Barnsley. The principal epidemic diseases caused 333 deaths, which corresponded to an annual rate of 1·0 per 1000, and included 138 from measles, 99 from whooping-cough, 48 from diphtheria, 31 from infantile diarrhœa, 11 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 3·4 in West Hartlepool, 4·0 in Sunderland, and 8·7 in Barnsley; and whooping-cough of 2·1 in Merthyr Tydfil and 2·2 in Sunderland. The 799 cases of scarlet fever and 1186 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 19 above and 39 below the respective numbers remaining at the end of the previous week; the 2 cases of small-pox were discharged during the week. Of the total deaths in the 96 towns 126 resulted from violence. The causes of 26 deaths were uncertified, of which 4 were registered in Liverpool and 3 each in Birmingham and Darlington.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 10·9, against rates declining from 17·0 to 12·0 per 1000 in the four preceding weeks. The 239 deaths in Glasgow corresponded to an annual rate of 11·2 per 1000, and included 12 from measles, 6 from whooping-cough, 5 from diphtheria, 4 from infantile diarrhœa, and 1 each from enteric fever and typhus. The 63 deaths in Edinburgh were equal to a rate of 9·9 per 1000, and included a fatal case each of scarlet fever, diphtheria, and infantile diarrhœa.

Irish Towns.—The 130 deaths in Dublin corresponded to an annual rate of 17·0, or 0·3 per 1000 below that recorded in the previous week, and included 4 from infantile diarrhœa, 3 each from measles and whooping-cough, and 1 from enteric fever. The 129 deaths in Belfast were equal to an annual rate of 17·1 per 1000, and included 7 from whooping-cough, 4 from measles, 3 from infantile diarrhœa, and 1 each from enteric fever and diphtheria.

ROYAL ALBERT HOSPITAL, DEVONPORT.—A special meeting of the governors of this institution was recently held to consider the serious financial position of the charity. It was stated that the appeal which had been made for £12,000 had realised less than £2000. The chairman proposed that the hospital be temporarily closed on Oct. 1st; this was seconded, but eventually an amendment was unanimously carried postponing the meeting for three months. The committee of management in the meantime will prepare a scheme for placing the hospital upon a sound financial basis.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Lieut. A. M. Clare, R.A.M.C., attd. Durham Light Infantry, also held a commission in the Canadian Army Medical Corps.

Died of Wounds.

Capt. (acting Major) K. Atkin, R.A.M.C., was educated at Cambridge and at Manchester University, and qualified in 1916. After holding appointments at the Hospital for Women and Children and at the Royal Infirmary, Manchester, he joined the R.A.M.C., and at the time of being wounded was medical officer to one of the battalions of the Liverpool Regiment.

Previously reported Wounded, now reported Died of Wounds.

Capt. W. F. McIsaac, Canadian A.M.C.

Wounded.

Capt. J. E. W. McFall, R.A.M.C.
Major G. S. Mothersill, D.S.O., Canadian A.M.C.
Capt. W. B. Gordon, R.A.M.C., attached R.F.A.
Capt. J. N. L. Blamey, R.A.M.C.
Lieut. F. Coates, R.A.M.C.
Capt. F. Hall, R.A.M.C.
Capt. S. A. Henry, R.A.M.C.
Capt. T. H. Houston, R.A.M.C.
Lieut.-Col. G. J. A. Ormsby, D.S.O., R.A.M.C.
Capt. H. P. Thompson, R.A.M.C.
Capt. W. Wilson, R.A.M.C.
Capt. A. H. Huycke, R.A.M.C.
Capt. H. M. Stephenson, M.C., R.A.M.C., attached R.G.A.
Capt. T. R. Trounce, R.A.M.C.
Major C. W. M. Hope, R.A.M.C.
Capt. J. M. McCloy, R.A.M.C.

Wounded and Missing.

Lieut. G. V. W. Anderson, R.A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. M. T. Ascough, R.A.M.C.
Major J. S. McConnachie, R.A.M.C.
Capt. S. S. Meighan, R.A.M.C.
Lieut. D. Robertson, R.A.M.C. attached Royal Scots.
Capt. W. M. Christie, R.A.M.C., attached S. Staffs Regiment.

Missing.

Capt. T. Blackwood, R.A.M.C., attached R.F.A.
Capt. C. R. Crowther, R.A.M.C.
Capt. D. Gillespie, R.A.M.C.
Capt. W. T. P. Meade-King, R.A.M.C.
Lieut. A. Boyle, R.A.M.C.
Capt. M. S. Esler, R.A.M.C., attd. Middlesex Regiment.
Lieut. A. S. Findlay, R.A.M.C.
Capt. W. G. Harnett, R.A.M.C.
Capt. N. A. A. Hughes, R.A.M.C.
Capt. C. C. Jones, R.A.M.C.
Lieut.-Col. H. B. Kelly, D.S.O., R.A.M.C.
Lieut. F. W. M. Lamb, R.A.M.C.
Major F. G. Lescher, M.C., R.A.M.C.
Lieut. F. B. O'Dowd, R.A.M.C., attached W. Yorks Regt.
Lieut. J. W. Jones, R.A.M.C., attached Rifle Brigade.
Capt. A. B. Simpson, R.A.M.C.
Capt. D. M. Smith, R.A.M.C., attached North'n Regiment.
Capt. C. Witts, M.C., R.A.M.C.
Lieut. J. Findlay, R.A.M.C., attached Worcester Regiment.
Capt. R. M. Coalbank, R.A.M.C., attached Lancs Fusiliers.
Capt. W. F. Dunlop, R.A.M.C., attached North'd. Fusiliers.
Capt. F. H. McCaughey, R.A.M.C., attached North'd. Fus.
Lieut. A. M. McCormick, R.A.M.C., attached Lincs Regt.
Capt. H. S. Moore, R.A.M.C., attached Lincs Regiment.
Capt. R. W. Pearson, M.C., R.A.M.C., attd. Durh. L.I.
Capt. F. C. H. Bennett, R.A.M.C., attd. North'd Fusiliers.
Capt. J. M. McKenzie, M.C., R.A.M.C., attd. North'd Fus.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. G. L. Thomas, M.C., R.F.A., killed in action, eldest son of Dr. I. Thomas, of Maesffrwd, Hirwain, Glam.

Lieut.-Col. B. H. Thorne, North Stafford Regiment, killed in action, son of the late Dr. Bezly Thorne, of Harley-street, London.

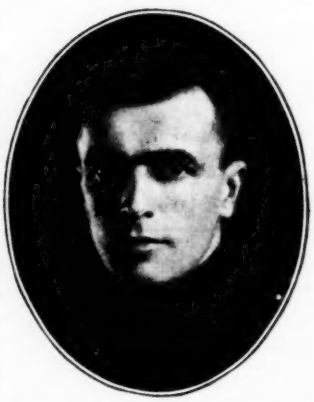
Lieut. P. H. Johnston, R.F.A., died of wounds, only son of the late Dr. J. H. Johnston, of Nottingham.

OBITUARY OF THE WAR.

ALFRED LESLIE PEARCE GOULD, M.D., M.CH. OXON., F.R.C.S. ENG.,

TEMPORARY SURGEON, ROYAL NAVY.

Surgeon A. L. Pearce Gould, R.N., who was killed in action on May 19th at the age of 31 years, was third son of Sir Alfred Pearce Gould. His school days were passed at Fretherne House School and at Charterhouse. Winning an open classical scholarship at Christ Church he went up to Oxford, devoting his first two years to reading classics. He took a first class in Natural Science and completed his medical curriculum at University College Hospital, London, where he gained the Erichsen gold medal. He graduated M.B. Oxon. in 1913 and F.R.C.S. Eng., M.D. & M.Ch. Oxon. in 1916. In 1917 he was awarded the Radcliffe Travelling Fellowship—the second of two brothers to hold this coveted distinction. At his hospital he was house physician to Sir John Rose Bradford, obstetric house physician to Dr. Herbert Spencer, and was just entering on his duties as house surgeon to Dr. Wilfred Trotter when war broke out, and on August 3rd, 1914, he received a commission as temporary surgeon in the Navy and served for a year at Haslar and was then appointed to a hospital ship in the Mediterranean and was present at the evacuation of Suvla Bay. He was invalided home with enteric fever in January, 1916, and when convalescent was posted at the R.N. Hospital, Plymouth, where he was operating surgeon for 18 months in succession to Mr. Keogh Murphy. In January of this year he was transferred, at his own request, to the Naval Division in France as regimental M.O. His battalion was in action in the early morning of May 19th, and he was busy attending the wounded in the aid-post and met his death instantaneously by the explosion of a shell which fell quite close to him.



Leslie Gould was a fine musician, a keen and skilful fisherman, an admirable horseman, and a very successful photographer, and he took a deep interest in social and religious movements. He had, in fact, a great capacity for using well every moment of life. Two of his teachers write letters of sympathetic appreciation from which we can only quote two brief sentences. "Highly educated, a fine Oxford classical scholar, possessed of a keen intellect, an earnest and constant seeker of knowledge, an admirable assistant, careful and reliable, he was a delightful man to work with." "To those who have had the opportunity of appreciating his keen, critical, and stimulating mind, and of profiting by contact with it, his untimely death means not merely the cutting short of a career of the richest promise but a sense of deep personal loss."

WILLIAM ELMER BROWN, M.D., C.M. ONTARIO,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. Elmer Brown, who was recently killed on active service, was 24 years of age, having been born at Mallorytown, Ontario, Canada, in October, 1893. He graduated in medicine at the Queen's University, Kingston, in 1916, and spent the following year as house physician to the Kingston General Hospital. During this time he joined the Canadian Army Medical Corps, gaining his captaincy in September, 1917. Arriving in England in March of this year, he was immediately transferred to the Royal Army Medical Corps, and as medical officer attached to a well-known British regiment at the front he was wounded in the recent offensive, shortly dying of his injuries.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned in a despatch received from Lieut.-Gen. G. F. Milne, K.C.B., D.S.O., Commander-in-Chief, British Salonika Force, for gallant conduct and distinguished services rendered during the period from Sept. 21st, 1917, to Feb. 28th, 1918:—

Royal Army Medical Corps.—Temp. Capt. D. I. Anderson; Temp. Capt. G. V. Bakewell; Capt. T. Y. Barkley; Temp. Capt. D. M. Borland; Temp. Capt. R. C. Brown; Capt. M. C. Cooper; Temp. Capt. P. C. Davie; Capt. E. Davies; Capt. G. G. Drummond; Capt. (temp. Maj.) A. W. Falconer, D.S.O.; Capt. C. E. C. Ferrey; Temp. Lt. E. Gardner; Major (acting Lt.-Col.) F. J. Garland; Temp. Capt. T. E. George; Qrmr. and Hon. Capt. G. W. Harris; Capt. L. A. Harwood; Lt.-Col. P. H. Henderson, D.S.O.; Capt. and Bt. Maj. (acting Lt.-Col.) B. Johnson; Lt.-Col. M. M. Lowsley; Capt. (temp. Lt.-Col.) H. G. G. Mackenzie; Capt. W. H. Manson; Temp. Capt. L. G. McCune; Capt. A. M. McCutcheon; Temp. Capt. J. H. McNicol, M.C.; Temp. Capt. F. H. Morrell, Spec. List; Capt. J. A. Musgrave; Capt. B. E. Potter; Capt. P. S. Price; Capt. H. B. Sherlock, M.C.; Capt. H. W. Torrance; Capt. (acting Maj.) A. L. Urquhart; Maj. and Bt. Lt.-Col. F. E. A. Webb; Capt. H. W. Weir; Temp. Lt.-Col. C. M. Wenyon, C.M.G.; Lt.-Col. J. R. Whait; Temp. Capt. E. C. White; Capt. G. White; Maj. R. K. White; Temp. Capt. A. Wilkin; Temp. Maj. H. W. Wiltshire.

Indian Medical Service.—Temp. Lieut. H. S. Rajan.

THE VARYING COSTS OF CIVILIAN HOSPITAL EXPENDITURE.

A recent Army Council Instruction has just defined the position of the county director as responsible official head of the voluntary aid organisation in his district, with the exception of permanent civil hospitals and those administered by boards of guardians or asylum committees. The necessary expansion of a civil hospital for the needs of military patients may be in itself a serious additional responsibility for an institution built for different purposes, but when added to this there is a constant rise in the price of food and drugs the Government capitation grant of 4*s.* per day can only slightly lessen the burdens of the administrators. In these circumstances it is not surprising that the British Hospitals Association should have made a claim upon the War Office for an increased grant which has now been acceded to, though 4*s.* 9*d.* per occupied bed in place of the former capitation grant of 4*s.* and a grant of 6*d.* per unoccupied bed will not meet the increased expenses, assuming that the old standards are to be maintained. With certain conditions, however, an annual grant of a lump sum may be made. The new scale is effective from January, 1918, and a similar scale will be paid by the Admiralty. A report on the subject has now been issued by the War Office, signed by Dr. E. Napier Burnett and Mr. R. Orde. Sixteen hospitals were visited, some with and some without medical schools, and in all cases testimony is given as to the willingness and courtesy of the secretaries in supplying information. The report states that although the figures on which the award is founded are for the year 1916, while the hospital association based its claim on the undoubted rise in prices since that date, there are certain other facts that have a material bearing on the matter. Among these are: that military patients require less nursing than the civil, that fewer nurses are needed for such cases, and that while military patients may have vigorous appetites the extra cost should be to some extent balanced by the fact that less food is required for fewer nurses; all matters which must depend upon divergent circumstances. Another point that is brought out by the report is the varying cost at different hospitals of certain broad items such as food, fuel, and laundry, some hospitals revealing a special aptitude for economy in one or other of the items mentioned. For example, an investigation conducted in 1916 showed that the cost of soap and alkali per 1000 articles washed varied from 2*s.* 10*d.* to 26*s.* The cost at that time should have been a little over 1*s.*, says the report—for a very large laundry, we presume—the discrepancies in price being due to the enormous variations in the quantities of soap and alkali used. Other anomalies of a like kind are shown, and the report is highly valuable as showing in what direction care and economy should be maintained.

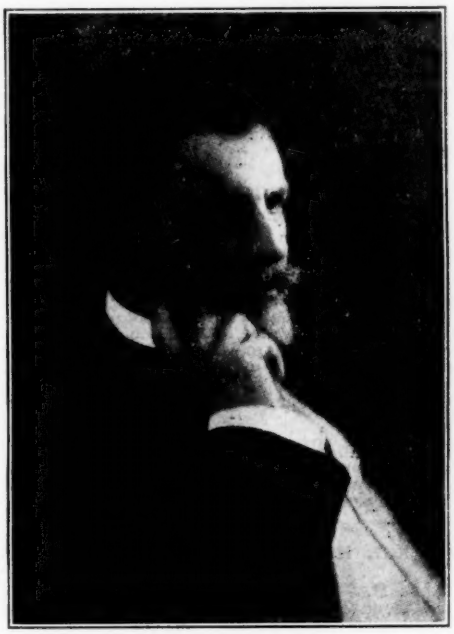
WE have received the following from Mrs. Agnes Savill, M.D.:—"I see in THE LANCET the statement that Royaumont, the hospital at Villers Cotterets, has been abandoned, and I have had many inquiries about this. The advance hospital we had at Villers Cotterets had to be left under shell fire, and the staff walked to Royaumont, which is near Chantilly. The hospital there is still in full swing and very busy."

Obituary.

PROFESSOR POZZI.

THE distinguished French surgeon and gynæcologist, Professor Pozzi, was fatally shot on June 13th in his consulting-room in Paris by a lunatic patient.

Samuel Jean Pozzi was born at Bergerac (Dordogne) in 1846. He was educated at the lycées of Pau and Bordeaux, becoming a student of medicine in Paris in 1869, where he was an apt pupil of Paul Broca. His early academic successes obtained him the title of agrégé in 1877, and six years later he was appointed surgeon to the Hôpital de Lourcine which, after Broca's death, became known by his name. At this time he devoted himself mainly to gynæcology, and in 1901 was elected to the chair in this subject founded by the city of Paris. Being charged by the French Government at different times with scientific missions to Germany, England, Italy, Austria, and the United States, he soon acquired a world-wide reputation. From 1885 to 1894 he acted as secretary-general of the French Congress of Surgery, and in 1895 was elected to the Academy of Medicine. In 1898 he became a senator, and added to his reputation that of an able man of affairs. Other



PROFESSOR POZZI.

honours naturally followed. He became President of the Surgical Society of Paris, of the Congress of Gynæcology which met at Marseilles in 1898, and he was one of the vice-presidents at the Paris International Congress of Gynæcology in 1900. He was an honorary Fellow of the Royal College of Surgeons of England and an officer of the Legion of Honour.

Professor Pozzi had a well-deserved reputation as a teacher. He held for many years the leading place among French gynæcologists, and did much for that branch of medicine both from its medical and surgical aspects. Gowned in a white overall and wearing a black cap of Florentine fashion, he was a picturesque figure as he toured his wards with assistants and students, and not infrequently followed by a number of interested visitors. A man of natural charm, he was specially attentive to the foreigner who wished to follow his clinical practice.

Professor Pozzi was a prolific and fruitful writer. After his M.D. thesis on pelvic fistulæ, his first published work was on the subject with which his name is still chiefly associated—viz., "The Value of Hysterectomy in Fibrous

Tumour of the Uterus" (Paris, 1875). Other early works dealt with amputation wounds, cerebral localisation, and sclerosis of the convolutions in mental disease. His famous text-book on "Clinical and Operative Gynæcology" first appeared in 1890, was translated by the New Sydenham Society (1892–93), appeared in American form edited by Brooks H. Wells (1892), in German edition with a preface by P. Müller, and in Russian (1897) in association with Voff. He was founder and for many years director of the *Revue de Gynécologie et de Chirurgie Abdominale*, a richly illustrated journal containing abstracts of home and foreign original work. Fond of antiquarian studies in general, and a collector of coins and statuettes, he was a keen student of the history of medicine, and to him we owe the reasoned conclusion that the last illness of Princess Henrietta, daughter of King Charles I. of England, was due to a ruptured extra-uterine pregnancy in the first or second month.

Professor Pozzi was, as already noted, a great traveller on behalf of official gynæcology. He was present at the annual meeting of the British Medical Association at Sheffield in 1908, introducing there a discussion on uterine displacements. He remained highly receptive of new ideas from whatever quarter, and after a visit to New York in 1909 returned much impressed by the transplantations of organs and tissues accomplished by Dr. Carrel at the Rockefeller Institute. One of his most recent addresses dealt with the hospital of the future, in which he drew on the abundant material collected on his travels. He was firmly impressed with the value of simplicity and adaptability, and recommended the use and construction of buildings which could be demolished without hesitation to be replaced by others of more recent ideas. The qualities which we have here briefly sketched made Professor Pozzi a figure in international medicine.

ERNEST COLWELL MAGUIRE, M.D., C.M. ABERD.

THE death is announced on June 10th, after a week's illness, of Dr. E. C. Maguire, a well-known Brighton physician, at the early age of 48 years. Dr. Maguire was born at Tain and educated at Aberdeen Grammar School, receiving his medical training at the University. He took the M.B. and C.M. in 1891 and proceeded to the M.D. degree in 1896, and after holding appointments in various parts of the country settled at Brighton in partnership with Mr. William J. Stephens and Mr. W. A. Bowring. A careful physician and a genial man, Dr. Maguire soon had an extensive private practice and many public appointments. Among other posts he was police surgeon and was an excellent medical witness. The war made serious calls on him. As a surgeon to the V.A.D., Sussex 53, as a member of the medical staff of the Royal Pavilion Military Hospital, and as corps surgeon (and secretary) to the Brighton and Hove Branch of the St. John Ambulance, he ungrudgingly gave of his best and his untimely end no doubt was accelerated by overwork.

GEORGE HERBERT JOHNSON, L.R.C.P. EDIN., M.R.C.S.

Mr. G. H. Johnson, of Teignmouth, Devon, died on June 10th, in his sixtieth year. He was a Yorkshireman, and succeeded to the late Dr. McGrath's practice at Teignmouth 33 years ago. He was on the honorary medical staff of the local hospital, a lecturer and examiner of the St. John Ambulance Society, and was formerly captain in the 4th Volunteer Battalion Devon Regiment, and a first-class shot. He was also an excellent swimmer, a fisherman, and a prominent Freemason. Mr. Johnson was highly esteemed in Teignmouth.

RICHARD J. PURDON, M.D.

Dr. Richard J. Purdon, whose death occurred in his seventy-third year after a prolonged illness, was a well-known practitioner in Belfast and a son of Dr. Charles Purdon and a nephew of Dr. Henry Purdon, both in their time engaged in large general practices in the city. Dr. Richard Purdon studied at Queen's College, Belfast, and the Carmichael School, Dublin, graduating M.D. and M.Ch.R.U.I. in 1883. He became visiting physician to the Belfast Lunatic Asylum, attending physician to the "Old Poorhouse" of the Belfast Charitable Society (the oldest charity in the city) physician (and afterwards consultant) to the Forster Green Hospital for Consumption, and Medical Visitor in Lunacy to the Recorder of Belfast. He is survived by his widow, two daughters, and two sons, one of whom is Colonel W. Brooke Purdon, D.S.O., R.A.M.C., a well-known International Rugby footballer.

THE LANCET, VOL. I., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of June 29th is in preparation. Owing to the increasing shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on June 13th, Sir George Makins, the President, being in the chair.—The Secretary reported the death on June 7th of Mr. Lewis Albert Dunn, member of the Council and past member of the Court of Examiners. A vote of condolence to Mr. Dunn's relatives was passed. The President stated that the vacancy on the Council occasioned by the death of Mr. Dunn would be filled up at the annual meeting of Fellows in July, 1919.—A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship, stating that at the recent examination 34 candidates presented themselves, when 7 were approved and 27 rejected.—A report was read from the Court of Examiners, stating that at the recent Final Examination for the Fellowship 16 candidates were examined, and that of these the following acquitted themselves satisfactorily:—

Arthur Morford, St. Bart's. Hosp.; Ernest Farquhar Murray, St. Andrews University and St. Bart's. Hosp.; and David Percival Dalbreck Wilkie, Edinburgh University.

The Council conferred the diploma of Fellow on Mr. Murray and Mr. Wilkie. Mr. Morford will not be entitled to the diploma until he has attained the requisite age.—In accordance with a report from the Board of Examiners in Dental Surgery it was resolved to grant to the following candidates the Licence in Dental Surgery:—

Jacques Alcee and Arthur Frederick Bartle, Guy's Hosp.; Christopher Egbert George Busbridge, Univ. Coll. and National Dental Hosps.; Edward Garratt Foulston, Myer Ginsberg, Herbert Oliver Holmes, Frederick Laurence King, and Roy Victor Kingham, Guy's Hosp.; Earl Leslie Robert, Middlesex and Royal Dental Hosps.; Dorothy Mary Smith, Royal Free and Univ. Coll. Hosps.; and Ian Murray Thomson, Guy's Hosp.

The following appointments as examiners were made:—

Board of Examiners in Anatomy and Physiology for the Fellowship.—*Anatomy:* W. H. Clayton-Greene, A. M. Paterson, A. Ralph Thompson, W. Wright. *Physiology:* F. A. Bainbridge, G. A. Buckmaster, J. B. Leathes, H. W. Lyle.

Conjoint Examining Board.—*Elementary Biology:* James P. Hill, T. W. Shore. *Anatomy:* F. Wood Jones, F. G. Parsons, Arthur Thomson. *Physiology:* G. A. Buckmaster, C. M. Hinds Howell. *Midwifery:* J. S. Fairbairn, Cuthbert Lockyer, C. Hubert Roberts, G. F. Darwall Smith. *Public Health:* Part. I.: J. W. H. Eyre; Part II.: F. N. Kay Menzies. *Tropical Medicine and Hygiene:* Part I.: J. W. H. Eyre; Part II.: C. W. Daniels. Mr. William Thorburn was re-elected a member of the Court of Examiners.

A report was read from Dr. W. S. A. Griffith on the proceedings of the Central Midwives Board during the year 1917. The thanks of the Council were given to Dr. Griffith for his report.—On the suggestion of the President a committee was appointed to consider the proposals in connexion with the suggested formation of a Ministry of Health, and the President was authorised to appoint from this committee representatives to serve on a small committee jointly with the Royal College of Physicians of London.—A committee was appointed to consider the heavy rate of rejections at the Primary Examination for the Fellowship and to report on the question whether any alteration was desirable.—The best thanks of the Council were given to Mr. J. Foster Palmer for presenting to the College a number of interesting books and engravings.—Sir C. A. Ballance was elected a representative of the College on the Court of Governors of the University of Sheffield for three years in the vacancy occasioned by the expiration of the term of office of Mr. W. Harrison Cripps.

CENTENARIANS.—Mr. W. Cook Vivian, of Camborne, Cornwall, recently celebrated the hundredth anniversary of his birthday.—Mr. Moses Stone Brain, of Warmley, near Bristol, died on June 12th in his 101st year.

THE MEDICAL AND DENTAL REGISTERS.—These two official publications of the General Council of Medical Education and Registration of the United Kingdom for the current year have just been issued. The Medical Register shows that there were on New Year's Day, 1918, 43,819 persons on the roll, as against 43,481 in 1917. 54 per cent. of the total belonged to the local Register for England, 32 for Scotland, and 14 for Ireland. During the year 1917 1134 persons were added to the Register, 35 names were restored, and 831 removed. The cause of removal in the majority of cases was death, but 24 were erased under Section XIV. of the Medical Acts and 6 under Sections XXVIII. and XXIX. Since 1915 no practitioner has had his name removed under the heading "On Ceasing to Practise." The Dental Register contains 5524 names, the additions to the previous roll numbering 130, while 131 names have been removed—105 on evidence of death, 24 under Section 12 of the Dentists Act, and 2 under Section 13. The names restored to the Register numbered 13.

DONATIONS AND BEQUESTS.—By the will of the late Mr. David George, of Croydon, the testator leaves, on the death of his wife and his daughter and her husband, £2500 to the Bignold Cottage Hospital, Wick, and £1000 to the Croydon General Hospital.—The late Mrs. Gertrude Lorilland has left, subject to a life interest, £1000 to the Cancer Hospital, Brompton.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on May 16th, with Sir Francis H. Champneys in the chair.—A letter was considered from the Clerk of the Privy Council, transmitting for the information of the Board a copy of an Order made by the Local Government Board for Ireland pursuant to the provisions of Sections 3 (5) of the Midwives (Ireland) Act, 1918, laying down the regulations for the elections of elected members and the consultations with bodies to be consulted in connexion with the appointment of appointed members of the Central Midwives Board for Ireland. The Board decided that the Clerk of the Privy Council be thanked for his communication.—A letter was considered from the Clerk of the County Council of the Parts of Lindsey, transmitting for the information of the Board a copy of a resolution passed by the Public Health and Housing Committee and the Midwives Act Committee of the Lindsey County Council, suggesting an amendment of Clause 2 of the Maternity and Child Welfare Bill now before Parliament so as to enable a county council to establish one committee for public health purposes, including such matters as maternity and child welfare and the supervision of midwives. The Board directed that the clerk of the Lindsey County Council be thanked for his communication.—A letter was considered from a correspondent asking the Board to investigate his complaints of the negligence of a certified midwife who attended his wife in her confinement. The Board decided that the reply be that the Board, while expressing its sympathy with the correspondent in his loss, desired to point out that the case was under the supervision and control of a medical practitioner, the midwife in attendance acting as a monthly nurse only, under the directions of the doctor, and that the Board has therefore no jurisdiction in the matter.—The Board considered a form of "Notification by a midwife of her engagement to attend a confinement" recently issued by a local supervising authority. The Board decided that the attention of the Local Government Board be called to the form issued by the local supervising authority, and especially to the note at the foot, which seems to the Central Midwives Board to be an endeavour to enforce the notification of pregnancy on midwives; and that the Local Government Board be asked to deal with the matter.—A letter was considered from the county medical officer of health for Northumberland asking the opinion of the Board as to whether, under the circumstances stated, a certified midwife delivering a patient in the absence of the doctor engaged for the case is acting as a midwife or as a monthly nurse. The Board decided that the county medical officer of health for Northumberland be informed that in the opinion of the Board the midwife, on the facts as stated, appears to be acting as a midwife and not as a monthly nurse.—Further correspondence was considered with the county medical officer of health for Somerset, transmitting copies of letters which have passed between himself and the General Medical Council with reference to the action of a registered medical practitioner in giving a certificate to an uncertified woman certifying that she was "quite capable of undertaking the duties of an ordinary midwife." The Board decided that the papers in the case be forwarded to the General Medical Council with a request that the Council will take such action in the matter as may seem fit to it, and that the Council be informed that, if so desired, the Board will undertake to appear as the prosecutor in the case.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Highlands and Islands Medical Service.

THE fourth report of the Highlands and Islands Medical Service Board has been submitted to Parliament and published. It notes at length the scheme approved by the Secretary for Scotland with the consent of the Treasury, providing for the payment of further and temporary grants in respect of 1917 to certain medical practitioners under agreement with the Board towards the increased cost of travelling, and providing also in certain cases for the payment of an appropriate supplement to the income of practitioners where it is shown to the satisfaction of the Board that the total income from all professional sources is not now such as to furnish adequate remuneration having regard to conditions arising through the war or otherwise.

Midwives Bill.

A Bill to amend the Midwives Act, 1902, has been brought by the Government into the House of Lords. It received a second reading on Tuesday, June 18th.

A memorandum to the Bill states that—

> Since the enactment of the Midwives Act, 1902, Acts have been passed for Scotland (1915) and Ireland (1918), wherein are incorporated certain amendments and additions which experience has suggested, most of them having been included in the recommendations of the Midwives Act Committee of 1909. It is now proposed to bring the English Act into line with those in the other parts of the United Kingdom, and the present Bill is confined to that purpose, all contentious matter being thereby avoided.

It was agreed not to take the Committee stage for a fortnight.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 12TH.

Medical Boards.

Mr. PRINGLE asked the Parliamentary Secretary to the Ministry of National Service whether any fresh instructions or circulars had been issued to medical boards, either generally or to boards in particular areas; and, if so, whether he would lay these instructions upon the table of the House.—Mr. BECK: Instructions were issued that medical boards might be reduced to three, and in cases of great emergency even to two, although it has not been necessary to adopt the latter course. It would, I think, be wasteful to print for general circulation the suggestions made to the boards by the National Service Medical Department, but I shall be happy to have typewritten copies placed in the library where they will be available for Members. The Minister of National Service notes by the question paper that there is some anxiety concerning certain medical gradings. He has therefore asked me to make arrangements convenient to Members interested for my right honourable friend to meet them in a committee room upstairs, when he will be happy fully to explain the system adopted and to answer questions. Perhaps Monday afternoon would be convenient.

Mr. PRINGLE: Will the Minister of National Service make a statement in the House on the subject so that it may be available to the public?—Mr. BECK: My right honourable friend would be delighted to do so on the proper occasion.

Mr. P. A. HARRIS: Is the honourable gentleman aware that there is a strong feeling outside as to secret instructions issued to these boards, and can they be made public in order that we may understand the procedure?—Mr. BECK: There are no secret instructions.

Orthopædic Treatment in the East Midlands.

Sir MAURICE LEVY asked the Pensions Minister whether he was aware that in the East Midlands area there were not any institutions where discharged soldiers could receive orthopædic treatment as in-patients; whether he was aware that the Mayor of Leicester and the committee of the Royal Infirmary of Leicester had offered to build an extension of the Infirmary for in-patients requiring orthopædic treatment; and would he say why they had not been allowed to proceed with the scheme.—Mr. HODGE answered: The reply to the first and second parts of the question is in the affirmative. It had, I regret, to be decided that the Leicester scheme involving the construction of permanent buildings could not owing to shortage of labour and materials be allowed to proceed at the present time.

Training of Disabled Soldiers.

Mr. ANDERSON asked the Pensions Minister the number of medical cases which were now receiving training under his Department and the number of such cases which, after training, had been put in employment.—Mr. HODGE replied: The number of medical cases which were receiving training in the week ended June 5th, 1918, and the number which

had received training under the Ministry up to that date are 6526 and 7613, respectively, or a total of 14,139 made up thus:—

	Under training.	Trained.
General subjects (institutions and workshops) ...	4477	2722
Blind (St. Dunstan's)	561	422
Lord Roberts' Memorial workshops	755	1385
Munition work	733	3084
	6526	7613
Total...	14,139	

Medical Treatment in Elementary Schools.

Mr. ROWNTREE asked the President of the Board of Education whether he could state the approximate number of children in the elementary schools under the control of local education authorities who had not exercised their power to provide medical treatment; whether he could state the approximate percentage of children in these schools suffering from the following defects: defect of vision, defect of hearing, ear disease, adenoids or enlarged tonsils, injurious decay of the teeth, uncleanliness of body, ringworm of the head, tuberculosis, heart disease, and malnutrition; and whether he could state the approximate number of children in these schools suffering from these defects.—Mr. HERBERT FISHER wrote in reply: The approximate number of children in elementary schools under the control of local education authorities who had not in 1916 provided any facilities for medical treatment is about 500,000. The Board are not in a position to give percentages of defects for these particular areas, but from an investigation made in 1915 of the figures given in the school medical officer's reports for 90 areas of the defects found among children at the routine inspections conducted by the staff of the School Medical Service it appeared that the percentages of defects were roughly as set out below. The Board have no reason to suppose that these percentages have materially altered. In the case of vision the figures were based on the inspections in 34 areas and for tuberculosis in 52 areas.

	Percentage defective.
Defect of vision	17
Defect of hearing	11
Ear disease	2·5
Disease of nose and throat (adenoids and enlarged tonsils)	20
Dental disease	70
Uncleanliness of body	6
Skin disease, including ringworm of the head	1·8
Disease of heart and circulation	3·5
Malnutrition	13
Tuberculosis	0·5

It should not be assumed that the field within which treatment should or could appropriately be provided by local education authorities is coextensive with the field of ascertained defect.

Mr. ROWNTREE asked how many of the local education authorities had exercised their power, under sanction of the Board, for the creation of machinery or facilities for the provision of medical treatment, and how many had not done so.—Mr. FISHER replied: The number of local education authorities who during 1916 provided facilities for one or more forms of treatment was 276. The number providing no facilities was 43.

THURSDAY, JUNE 13TH.

Medical Examinations.

Mr. P. A. HARRIS asked the Parliamentary Secretary to the Ministry of National Service whether he was aware that in the medical examinations of men which were now proceeding complaints were continually being made of the cursory and inadequate nature of the examination; that men were not afforded any opportunity of stating the maladies or defects from which they suffered or of giving any information as to their health; and that certificates of specialists or of their medical attendants produced by the examinees were frequently ignored; and whether he would issue instructions that all these matters should in future receive proper and adequate attention.—Mr. BECK answered: Certain complaints of cursory and inadequate examination by National Service medical boards have been made. They have been comparatively few, and on investigation have generally proved not to be well founded.

Mr. HARRIS: Is the honourable gentlemen aware that the 15 minutes which used to be devoted to the medical examination of each man has now been reduced to seven minutes?—Mr. BECK: I think my honourable friend is mistaken (cries of "No").

Mr. R. HARCOURT: Are medical boards bound to take into account the certificates of private practitioners?—Mr. BECK: Most explicit instructions to that effect are issued, and every medical board I have seen personally has a notice up asking men to produce any medical certificates which they bring with them.

Mr. FRANCE: Is the honourable gentleman aware that the number of appeals has increased enormously since this change has been made in the medical board?—Mr. BECK: I do not think that the percentage of appeals has been increased, but the number of appeals has increased, because of the enormous number of men called to the colours.

Mr. HINDS asked how many men between the ages of 43 and 45 who were medically examined at Conduit-street for the week ending June 8th were passed Grade I.—Mr. BECK replied: Of the men of the new military age examined at Conduit-street during the week ending June 8th approximately 33 per cent. were graded in Grade I.

Answering Sir H. NIELD, Mr. BECK wrote: The principles underlying the medical grading of men have been in no way changed. A condition of ill-health which would lower grading in a younger man would have a similar or greater effect on an older man.

Sir H. NIELD asked whether any and, if so, how many members of medical boards had resigned since Nov. 1st, 1917; whether the honourable Member would state in how many cases such resignations were due to alleged differences of opinion between the members of medical boards and the president of the board, owing to his action in disregarding the opinions of members of the board and placing men in a higher grade than that in which the members of the board thought the man should be placed; what proportion of men so examined were personally examined by the president; and what opportunities were afforded other members of the board of further examination or for discussion before the grade was determined by him.—Mr. BECK replied: Out of some 2500 doctors serving as members on National Service Medical Boards, 16 have resigned from service since November, 1917. So far as I am aware, none resigned on the grounds suggested by the honourable Member.

Sir H. NIELD asked which medical boards in the London region (designating them by such particulars as would identify them) had been reduced in number from five to three members; and under what authority was that reduction effected, in view of the assurances given to the House for the effective medical examination of those who became liable for military service under the last of the Military Service Acts as being between the ages of 41 and 51 years.—Mr. BECK answered: The National Service Medical Boards at Conduit-street, which have been specially dealing with men coming under the extended age-limits, have during this temporary high pressure necessarily been composed of three members, and it has not been practicable as yet to increase that number. With regard to the other boards in the London region, I should require to have detailed inquiries made, as the composition of the boards has varied with the pressure of the recruits attending for examination and the number of doctors available for service on the panel.

Dental Surgeons in the Army.

Mr. A. F. WHYTE asked whether, despite an explicit pledge to the contrary, dentists were still being taken for ordinary combatant service, and the nation and the Army thus deprived of a kind of medical assistance of which they stood in the greatest need.—Mr. MACPHERSON wrote in reply: I am not aware of any pledge of the nature suggested, but, on the contrary, I stated in reply to a question during March that the dental needs of the Army are not such that all qualified dentists serving in the Army can be used for their professional work. I am afraid it is not possible to give an undertaking that no qualified dentists will be posted to combatant units in the first instance, but should any of these be subsequently required for dental service in the Army they will be reposted.

Mr. WHYTE asked how many of the 640 dentists holding commissions in the R.A.M.C. were serving with the British Expeditionary Force in France.—Mr. MACPHERSON answered: At the present time 96 dentists are so employed, but the dental service in France is being reorganised and the number of dentists will be considerably increased.

Dentists in the Canadian Expeditionary Force.

Mr. WHYTE asked the Under Secretary for War how many dentists were employed by the Canadian Expeditionary Force in their professional capacity.—Mr. MACPHERSON answered: I understand that there are 201 dentists employed with the Canadian Expeditionary Force.

TUESDAY, JUNE 18TH.

Medical Grading of Recruits.

Answering Sir F. LOWE, Sir A. GEDDES (Minister of National Service) said: There has been no change in the standards of medical fitness required for classification in Grades 1 and 2. When introduced in October last the term "Grade 1" was defined as meaning men "who attain the normal standard of health and strength and are capable of enduring physical exertion suitable to their age." This definition was at that time placed in the Library of the House; it has never been varied. Current statistics covering large numbers of examinations show that there is no increase in the proportion of men placed in Grades 1 and 2. I would add that there is

no difference in principle in the grading of men above and below 43 years of age.

In reply to supplementary questions, Sir A. GEDDES stated that the number of complaints as to medical examinations was extraordinarily small. Out of the last million and a quarter examinations performed by National Service medical boards there was less than 1 per cent. of complaints. That was to say, there had been 11,441 protests of one sort or another, including appeals. Of these roughly 7800 had already been dealt with by the Appeal Tribunals, and 4266 cases had been allowed to go forward to the assessors, and 3379 had been refused such permission.

Dentists in the Army.

Replying to Mr. PENNEFATHER, Mr. MACPHERSON stated that of the 92 dental surgeons appointed to commissions between March 1st and June 10th 26 were from the ranks, 5 were from commissioned ranks, and 61 were from civilian practice.

Medical Examinations.

Sir A. GEDDES (Minister of National Service), speaking on the Vote of Credit, said with regard to medical examinations that he knew no change having been ordered in meaning of the terms Grades 1, 2, and 3. It was frequently suggested that there were secret instructions on this subject. He did not know of them. Medical boards had got definite instructions to be absolutely careful with men of the new military age.

WEDNESDAY, JUNE 19TH.

Soldiers and Venereal Disease.

In the course of the debate on the report of the Vote of Credit several honourable Members urged the War Office to repeal Regulation 40 D under the Defence of the Realm Act. This regulation imposes punishment for the offence of communicating venereal disease to soldiers.

Mr. MACPHERSON (Under Secretary for War) said that the regulation had been passed in view of the demand of the Dominions at the last Imperial Conference that action should be taken to prevent the spread of venereal disease. The subject of this disease was engaging the most earnest and serious attention of the Government. He was chairman of a very large conference which had met once and was meeting soon again. It was composed of Dominion representatives, American representatives, clerical representatives, and of officers at the War Office who were interested medically and administratively in the subject. Whilst he did not admit that venereal disease was more prevalent in the Army than in the civil population, they were doing everything that was possible to find some way to combat the disease. While he could not say for the Government that they would withdraw the regulation, because they believed it to be useful in that it might prove effective in a very difficult and delicate situation, he could assure the House that the Government, by means of the conference to which he had alluded, would do everything that lay in their power to help the health of the troops and eradicate this disease from the country.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Staff Surgeons to be Fleet Surgeons: C. A. G. Phipps, W. R. Harrison, W. G. Edwards, F. E. Bolton, R. L. Jones, R. H. Atkins, C. J. O'Connell, J. A. Thompson.

Staff Surgeon T. A. Smyth to be Fleet Surgeon specially for War Service.

H. H. Silley to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Colonels to be Major-Generals: J. B. Wilson, Temp. Maj.-Gen. E. G. Browne.

Lieutenant-Colonels, from R.A.M.C., to be Colonels: Temp. Col. G. W. Tate, J. D. Ferguson, Bt. Col. L. P. More.

ROYAL ARMY MEDICAL CORPS.

Officers, R.A.M.C., T.F., to be temporary Lieutenant-Colonels whilst specially employed: Major and Bt. Lieut.-Col. T. W. Griffith, Capt. J. Hay.

Capt. (acting Major) E. C. Lang to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Lieut.-Col. L. W. Harrison to be Brevet Colonel on appointment as Honorary Physician to the King.

Temp. Major J. Gott (Lieut.-Col., Hamps. R., T.F.) to be temporary Lieutenant-Colonel.

Major J. W. Kynaston to be acting Lieutenant-Colonel whilst specially employed.

Major D. P. Watson to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Temp. Lieut. B. Hart to be acting Major whilst specially employed.

Temporary Captains to be acting Majors: F. T. Hill, J. Proctor, I. S. Wilson, E. W. Craig, B. Knowles, E. Biddle, G. B. McTavish, W. Russell, H. B. Wilson, D. M. Hunter.

To be acting Majors: Capt. S. F. Fenwick; Temp. Lieut. A. M. Caverhill; Temp. Capts. G. W. R. Rudkin, C. A. Brisco, C. Roche, A. W. S. Christie, Temp. Major H. W. Bruce, Temp. Capts. L. S. C. Roche, C. H. Corbett, Capt. A. C. Amy, Temp. Capt. J. V. Holmes.

Temporary Captains relinquishing the acting rank of Major on re-posting: A. Sutherland, W. T. Brown.

Temporary Captains relinquishing the acting rank of Major: R. V. Dolbey, H. K. Graham-Hodgson, G. G. Timpson.

To be temporary Captains: J. O. Skevington, C. H. Treadgold, F. A. Anderson, C. F. Simpson, H. W. Drew, B. W. Gonin, H. Hannigan, C. S. Kingston, A. B. Northcote, W. A. Murphy, C. P. S. Hunter.

Temporary Lieutenants to be temporary Captains: J. B. Jordan, A. N. R. Rodgers.

J. F. Strickland, late temporary Captain, is granted the honorary rank of Captain.

To be temporary Lieutenants: J. H. D. Phelps, R. J. Hutchinson, J. H. Rodgers, G. W. Middlemiss, C. H. Bryan, J. M. H. Caldwell, J. Campbell, W. Q. Wood, P. A. Mansfield, J. M. Hall, M. F. Tylor, C. D. Lochrane, W. H. Gray, W. H. Trethowan, R. J. Willson, D. M. Young, E. L. N. Pridmore, R. J. Attridge, A. F. Galloway, J. Dewar, C. I. Harmar, F. W. P. Sullivan, J. R. Sutherland, W. Gilmore, W. C. Rainsbury, J. J. Foran, A. T. Densham, J. A. Berlyn, A. E. Clarke.

To be temporary Honorary Lieutenants: J. Todesco, C. H. Evans.

The undermentioned are granted temporary commissions whilst serving with the Ceylon Sanitary Company:—As Major: F. N. Holden. As Captain: C. L. de Zylva, J. A. Moraes. As Lieutenant: F. G. Stevens, T. C. Van der Ziel.

Officers relinquishing their commissions: Temp. Capts. H. Hargreaves, L. J. Hood, C. R. Chichester, R. H. G. Weston, J. C. Turnbull, J. Dixon, (Acting Major) F. T. Rees (and to be granted the honorary rank of Captain), A. P. Bowdler, W. D. Rose, S. Batchelor, F. W. Clement, M. E. Gorman, H. F. H. Eberts, J. M. D. Mitchell (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), E. C. Wallace, G. W. Harrison (on account of ill-health, and is granted the honorary rank of Captain); Temp. Lieuts. H. G. Arnott, W. B. Clarke, B. F. O'Reilly (on account of ill-health); Temp. Hon. Lieuts. E. V. Keller, G. V. Hunter.

Canadian Army Medical Corps.

Temp. Major T. H. Macdonald to be temporary Lieutenant-Colonel.

Temporary Captains to be temporary Majors: F. W. Tidmarsh, R. Pearse.

SPECIAL RESERVE OF OFFICERS.

Lieut.-Col. F. Kelly is seconded whilst holding the appointment as Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

The undermentioned Captains to be acting Majors whilst specially employed: G. M. McGillivray, G. S. Williamson, R. Errington.

Capt. E. C. Plummer relinquishes his acting rank on ceasing to be specially employed.

Capt. (acting Major) G. P. Kidd to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Capt. D. Colombos relinquishes the acting rank of Major on re-posting.

Capt. W. B. Foley to be acting Major.

Captains to be acting Majors whilst specially employed: J. Gossip, H. C. G. Pedler, J. Paulley.

Capt. E. S. Jones (T.F. Res.) to be Captain.

Lieut. D. H. Burleigh is seconded for duty.

To be Lieutenants: C. W. Hayward, E. F. Rabey (from University of London Contingent, O.T.C.), J. S. Mann (from Edinburgh University Contingent, O.T.C.), G. E. Tilsley (from Bristol University Contingent, O.T.C.), T. A. Butcher, J. C. Morris, W. A. Jackman, R. Wood.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

In the May issue of this journal Mr. Edred M. Corner discusses the technique of amputations, particularly the treatment of nerves, and comes to the conclusion that the technique of amputations should be revised in many particulars. While he considers the treatment of divided skin, connective tissue, and muscles to be satisfactory, he is of opinion that divided nerves is not satisfactory, and suggests flap-cutting for large nerves and crushing the nerve proximal to the point of division with ligature (quickly absorbable) of the divided and crushed ends for small nerves. The skin of no amputation wound should be sutured until all open structures, except perhaps bone, have been sealed. In a paper on "Results Obtained from the Use of Antidysenteric Sero-vaccine in the Field, with Regard to the Reduction of Case Incidence" Major H. Graeme Gibson shows that inoculation against bacillary dysentery with this vaccine can safely be carried out, and that from the results obtained, as far as they go, there seems to be some hope of reducing the case incidence of this disease in epidemic and endemic areas. Under the title of "Preliminary Agglutination in the Isolation of Typhoid and Dysentery Bacilli from the Excreta," Captain William Fletcher describes the technique of preliminary agglutination, believing it to be an economical and efficient method for the detection of carriers. Other articles are "X Ray Work in a Base Hospital in France," by Captain B. H. Stanley Aylward; "A Case of Exposure by Operation of the Intra-Pelvic Portion of the Great Sciatic Nerve," by Lieutenant H. E. Rawlence; and the first instalment of "The Symptoms of Acute Cerebellar Injuries as Observed in Warfare," by Lieutenant-Colonel Gordon Holmes.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 19th, 1918.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 13	...	120	73	56	62	65	Fine
,, 14	...	103	66	57	60	63	Cloudy
,, 15	0·34	105	64	47	51	55	Cloudy
,, 16	...	80	60	48	50	56	Cloudy
,, 17	0·05	101	65	44	46	49	Overcast
,, 18	0·12	114	61	47	51	58	Cloudy
,, 19	0·20	114	65	52	56	58	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Appointment.

JONES, E. HUGHES, M.D. Edin., has been appointed Medical Officer of Health for Rhyl.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary, Lancashire.—Asst. H.S. £200.
Birmingham University, Faculty of Medicine.—Senior Demonstratorship in Anatomy. £250.
Bournemouth, Royal Victoria and West Hants Hospital.—H.S. £175.
Bradford City.—Temp. Female Asst. M.O. 8 gns. per wk.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £100.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Cheltenham Eye, Ear, & Throat Free Hospital.—Non-res. Asst. S. £300.
Chester Royal Infirmary.—H.S. £200.
Canterbury, Kent and Canterbury Hospital.—Hon. S.
Doncaster Royal Infirmary and Dispensary.—H.S. £250.
Elizabeth Garrett Anderson Hospital, Euston-road.—Female Temp. Asst. S
Glamorgan County Asylum, Bridgend.—Temp. Asst. M.O. £6 6s. per wk.
Great Northern Central Hospital, N.—Casualty Officer. £150.
Hospital for Consumption, Brompton.—H.P. for 6 ms. 30 guineas.
Hospital for Sick Children, W.C.—H.S. for six months. At rate of £100 p.a.
Leeds General Infirmary.—Oph. H.S. for six months. At rate of £50 p.a.
Leith Town Council.—Female M.O. £400.
Manchester City.—Female M.O. £400.
Manchester Corporation.—Temp. Asst. Tuberc. Officer. £450.
Manchester County Asylum, Prestwich.—Locum Tenens. £7 7s. per wk.
National Hospital for Paralysed, &c.—Res. M.O., Maidenhead. £450.
Northumberland County, Local Education Authority.—Asst. School Med. Inspector. £350.
Plymouth, South Devon and East Cornwall Hospital.—H.P. £200.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. for six months. At rate of £60 p.a.
Royal London Ophthalmic Hospital, E.C.—Third H.S. £100.
Scottish Women's Hospitals for Foreign Service.—Female M.O.'s for Greece; also Asst. M.O. for Tuberc. Sanatorium for Serbs, France. £100; also Female Chief M.O. for Macedonia. £400.
Sheffield City Education Committee.—Asst. School M.O. £400
Rotherham Hospital.—Jun. H.S. £150.
Winchester, City of.—M.O.H. £550.
York County Hospital.—Female H.P. £200.

Births, Marriages, and Deaths.

BIRTHS.

GRAHAM.—On June 13th, at Drumsheugh-gardens, Edinburgh, the wife of Lieutenant-Colonel D. J. Graham, R.A.M.C., B.E.F., of a daughter.

GRAHAM-HODGSON.—On June 12th, at Burley Orchard, Chertsey, the wife of Major H. K. Graham-Hodgson, R.A.M.C., of a son.

ORTON.—On June 7th, at Fern Hill, Huyton, near Liverpool, the wife of D. C. Leyland Orton, L.R.C.P.Lond., M.R.C.S., D.P.H. Dun., L.D.S. R.C.S. Eng., Major, R.A.M.C. (T.), 14, Rodney-street, Liverpool, of a daughter.

MARRIAGES.

FALLE—HUXLEY.—On June 12th, at St. Mary's, Bryanston-square, by the Rev. L. J. Percival, Lieutenant Harold de Carteret Falle, R.N.V.R., son of the Very Rev. the Dean of Jersey, to Frances M. Huxley, M.D., 4, Harley-street, daughter of George Huxley, York House, London, W.1.

GRAHAM—SANCTUARY.—On June 13th, at Frampton, Dorset, Major T. O. Graham, M.D., D.P.H., F.R.C.S.I., R.A.M.C. (S.R.), to Susan Eva Sanctuary, A.R.R.C., daughter of Canon C. LL. Sanctuary, Frampton Vicarage.

ROBERTSON—LANGFORD.—On June 9th, at Swaythling, Hants, George S. Robertson, M.D., R.A.M.C., to Mary Helen, eldest daughter of Mr. and Mrs. J. A. Langford, Dulwich.

SIMPKINSON DE WESSELOW—CRAUFURD.—On June 15th, at Holy Trinity Church, Ayr, Captain Owen Simpkinson de Wesselow, R.A.M.C., to Margaret, youngest daughter of Sir Charles and the Hon. Lady Craufurd, Annbank House, Ayrshire.

THOMPSON—VERGETTE.—On June 14th, at Peterborough Cathedral, Captain H. P. Thompson, M.D., Ch.B., F.R.C.S.E., R.A.M.C., to Sophie Elizabeth, daughter of T. H. Vergette, Newborough, Peterborough.

WILSON—WEALE.—On May 30th, 1918, at St. James's, Muswell Hill, Alban Wilson, Captain, R.A.M.C., to Violet Gwendoline Weale, of Shrewsbury.

DEATHS.

ATKIN.—On June 6th, at a dressing station, of wounds, Captain Keyser Atkin, R.A.M.C., aged 25 years.

GETTINGS.—On June 15th, at Shothanger, Felden, Boxmoor, Harold Salter Gettings, L.R.C.P., L.R.C.S. Ed., L.R.F.P.S. Glasg., D.P.H. Birm., Research Worker, Medical Research Committee, aged 41 years, eldest son of John Salter Gettings, Surgeon, Chasetown, near Walsall.

HARTLEY.—On June 11th, George Thomas Hartley, L.R.C.P. Ed., L.R.C.S. Ed., L.S.A.

THORNE.—On March 21st, killed in action, Lieutenant-Colonel Bezly Houghton Thorne, North Stafford Regiment, son of the late Dr. Bezly Thorne, M.D., of Harley-street, and beloved husband of Sylvia Deane Thorne.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, June 27th.—Papers:—Prof. T. H. Havelock: Periodic Irrotational Waves of Finite Height.—Dr. G. N. Watson: The Diffraction of Electric Waves by the Earth (communicated by Prof. J. W. Nicholson).—Dr. A. D. Waller: Concerning Emotive Phenomena. Part II., Periodic Variations of Conductance of the Palm of the Human Hand.—Prof. J. A. MacWilliam: The Mechanism and Control of Fibrillation in the Mammalian Heart.—Dr. J. F. Gemmill: The Development of the Sea Anemones, Actinoloba Dianthus and Adamsia Palliata (communicated by Prof. E. W. MacBride).—Mr. R. Beer and Mrs. Agnes Arber: On the Occurrence of Multinucleate Cells in Vegetative Tissues (communicated by Prof. J. B. Farmer).—Dr. J. H. Mummery: The Epithelial Sheath of Hertwig in the Teeth of Man, with Notes on the Follicle and Nasmyth's Membrame (communicated by Sir E. Schäfer). And other papers.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of Post-Graduate Course were given in issue of June 1st.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.
(Details of Post-Graduate Course were given in issue of April 6th.)

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.
Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—
WEDNESDAY, June 26th.—4 P.M., Lecture IX.:—Dr. A. M. Williamson: The Housing Problem. (Followed by a Discussion.)
In the Laboratories of the Institute.
Course of Special Demonstrations and Discussions on Venereal Disease in connexion with the work of the Venereal Diseases Department:—
WEDNESDAY.—2.30 P.M., Demonstration V.:—Dr. J. H. Sequeira: Cutaneous Lesions in Venereal Diseases.

COLLEGE OF AMBULANCE, 3, Vere-street, Cavendish-square, W.
Course of Special Lectures and Demonstrations on Ambulance Work and First Aid (illustrated as far as may be possible and followed by a Discussion).
THURSDAY, June 27th.—4.30 P.M., Lecture VII.:—Dr. A. H. Thompson: First Aid in Injuries and Affections of the Eyes.

CHADWICK PUBLIC LECTURES, at the Surveyors' Institution, 12, Great George-street, Westminster.
FRIDAY, June 28th.—5 P.M., Prof. D'Arcy W. Thompson: Our Fisheries and the Food Supply. Lecture II.:—The Catch by Net, or the Great Herring Fishery (illustrated with lantern slides).

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. E. A. Aldridge, Brighton; Department of Agriculture and Technical Instruction for Ireland; Dr. H. W. Abbott, Lond.
B.—Mr. R. G. Badger, Boston; Dr. G. Blacker, Lond.; Dr. C. H. Bond, Lond.; Prof. P. Boveri, Milan; Dr. W. Bruce, Dingwall; Capt. W. Brown, R.A.M.C.; Dr. J. H. E. Brock, Lond.; Messrs. John Bell and Croyden, Lond.; Mr. H. Brown, Lond.
C.—Dr. S. D. Clippingdale, Lond.; Dr. A. F. Cameron, Dartford; Prof. J. A. Campbell, Singapore; Mr. L. Callender, Bolton; Mr. A. L. Clarke, Lond.; Dr. F. T. Corkett, Dorking.
D.—Dr. A. B. Dunne, Doncaster; Sir Bertrand Dawson, G.C.V.O., C.B.; Lieut.-Col. A. M. Davies, R.A.M.C.; Major J. Dorgan, R.A.M.C.
E.—Surg.-Gen. G. J. H. Evatt, C.B.
F.—*The Field*, Lond.
G.—Gibraltar, Sanitary Commissioners of; Mr. W. J. Gooding, New Malden; Dr. St. J. B. Graham, Atlanta, Ga.
H.—Dr. G. T. Hebert, Lond.; Highlands and Islands (Medical Service) Board, Edinburgh.
J.—Prof. G. J. Johnston, Dublin.
L.—London and Counties Medical Protection Society, General Sec. of; Messrs. Lea and Febiger, Philadelphia; Capt. T. Lovett, R.A.M.C.; Mr. W. B. Lowe, Great Barr; Local Government Board, Lond.; Dr. M. Lipinska, Lond.; Messrs. Longmans, Green and Co., Lond.
M.—Mr. G. F. Mathers, Edinburgh; Dr. O. May, Lond.; Capt. J. B. McDougall, R.A.M.C.; Ministry of Food, Lond.; Medical Research Committee, Lond.; Maudsley Neurological Clearing Hospital, Lond.; Mrs. F. Maclean, Hereford; Mr. H. Milford, Lond.
N.—National Baby Week Council, Lond.; Major C. Noon, R.A.M.C.; National Council for Combating Venereal Disease, Lond., Sec. of.
O.—Sir William Osler, Bart., Oxford.
P.—Messrs. F. and P. Piggott, Cambridge; Mr. H. K. Prosser, Lond.; Major H. P. Pickerill, N.Z.M.C.
Q.—Queensland Government Statistician, Brisbane.
R.—Dr. E. P. Robinson, New York; Royal Automobile Club, Lond., Sec. of; Mr. R. F. Reynolds, St. Ives; Rev. E. C. Robinson, Malvern; Capt. E. N. Russell, R.A.M.C.; Mr. H. S. Reynolds, Upwell; Royal Medical Benevolent Fund, Lond., Sec. of; Dr. W. C. Rivers, Worsboro' Dale; Dr. C. S. Redmond, Plymouth; Royal Society of Arts, Lond.; Royal Society, Lond.
S.—H.M. Stationery Office, Lond.; Dr. H. Sharman, Lond.; Dr. L. E. Shaw, Lond.; Society for the State Registration of Trained Nurses, Lond., Hon. Sec. of; Dr. H. Sainsbury, Lond.
U.—University of Cambridge.
W.—Dr. S. A. K. Wilson, Lond.; Capt. H. Whitehead, R.A.M.C.; Dr. J. A. Wilson, Warrington.

Notes, Short Comments, and Answers to Correspondents.

PUBLIC EULOGY OF THE MEDICAL PROFESSION.

THE satirist who describes all medical men as scoundrels may do the medical profession little harm, but a vast mass of a certain kind of popular faith does it little good. This last credits physicians and surgeons—particularly the latter—with powers little short of miraculous, and hallows beliefs which date from the days when the profession dabbled in magic. Who, for instance, is not familiar with the story which describes how at the hospital—preferably Moorfields—the eyes of some half dozen patients are daily taken out, "laid on the cheek"—it must be the cheek, that being part of the ritual,—scraped by ophthalmologists of surprising achievement, and finally "put back" in their sockets. A complete cure invariably follows, and the operation has, as a rule, been performed on the narrator's near kindred. It is in vain to reply to this miraculous recital that the eye is closely anchored to its moorings. Extraordinary feats of gastric surgery are not uncommon in popular legend, and there is analogical warranty for many of them, seeing that operations are performed nowadays which were undreamt of by our ancestors. But who endowed certain surgeons in Harley-street—preferably Harley-street—with the curious predilection for removing all the intestines and laying them on a plate—the plate here is part of the ritual—before finally sewing them in position? The legend, as it last came to us, described a particular performance in which a "Harley-street specialist" removed from his patient the intestines in their entirety, laid them on a plate, rushed from the scene of operation, darted the plate in front of the patient's horribly anxious wife, snorted "*Now*, are you satisfied?" before returning to the patient and repacking the abdomen. Then there is the suburban family doctor we have read of, who may be seen o' nights stealing along garden walls in pursuit of stray cats, for he makes a point of *always* trying a treatment on an animal before experimenting on a patient. One cat, one case, is his idea, and the situation seems to lend itself to kinematographic display. Pharmacy has its triumphs as well as vivisection in current talk and transpontine fiction, and he is still accounted the greatest iatrist who prescribes the nastiest physic. It used to be well known to many out-patients that phthisis, cancer, and even lunacy could be successfully combated by drinking largely from several medicine bottles at once; the lungs were held to be especially susceptible to liquids of the tonic kind, taken in bulk. The population of our out-patient departments to-day is better educated, but the belief in the bottle is represented by a readiness to supplement charitable science by resort to costly quackery.

TABULATED FOOD-SUPPLIES OF GREAT BRITAIN.

WITH a view to encourage the Irish agriculturist by bringing home to him the part he is playing in food production and as a supplier of food for the British population and the Allied Armies, the Irish Department of Agriculture has issued a statement in which are given the values of food and drink stuffs imported into and retained for consumption in Great Britain from the various countries as follows:—

	1913 Millions.	1916 Millions.		1913 Millions.	1916 Millions.
Ireland	£36	£59	Denmark ...	£22	£20
United States.	39	116	New Zealand...	9	18
Argentina ...	31	36	Netherlands ...	16	13
Canada	19	41	Australia ...	15	10
British India..	17	20	Russia	15	1

While, therefore, by 1913 Ireland's supply had reached a level only exceeded by one other country in the world, and that the United States of America, during the war the Irish supply has gone on increasing, although not in proportion to the abnormal increase from America. The figures for 1917 are not yet available.

PETROLOGY AND PARTURITION.

IN the volume for 1916 of the "Rivista degli Studi Orientali" of the University of Rome, Signor G. Boson treats of the names for stones of various kinds in ancient Assyria and Babylonia—that is to say, in cuneiform literature. Among the catalogue crop up varieties which he appropriately designates as *Pietre Medicinali*, and, strange to say, now we are furnished with the old Mesopotamian names for these, we at once see we are upon the correct track of the origin of some of the curious statements as to medical properties of certain stones, ascribed to them by Dioscorides in the "Materia Medica."

It will probably not assist our readers to give the cuneiform names, of which there are generally two for each species, because of the duplicate languages used in Sumerian and Babylonian times in Mesopotamia, but the following coincidences, or rather identities, with Dioscorides' recommendations, are particularly interesting and certain, for in them Signor Boson agrees with von Oefele's views as set forth in his article "Gynäkologische Steine" in the *Zeitschrift für Assyriologie*, xiv.

The stones now to be enumerated do not include any amulets supposed to have magic medical virtues, but only "those which, because of their chemical contents, were believed to be curative medical agents." The first of them, whose cuneiform names point it out as being beneficial for enceinte patients because they indicate it as being "La pietra della Gravidanza," certainly appears to be the λίθος σαμιός of Dioscorides, of which that author asserts "Partus, ut tradunt, adligatus, accelerat et conceptus feminarum custodit." A second, whose ancient Asiatic names pronounce it to have been a parturition stone, is equivalent to Dioscorides' λίθος ἴασπις, and is one of which that classic writer knew its Assyrian name, for he says of it—"Quaedam lineis albis resplendentibus præcerigitur Assyrius appellata." Its medical value Dioscorides considered to be "accelerare partum, feminoribus appensa." For a stone desired to produce the opposite effect, as Dioscorides puts it, "Gravidis continet partus, cum lubricæ sint vulvæ et parum tenaces, sinistro bracchio adalligatas." This was his λίθος ἀετιτης, whose cuneiform counterpart was "the stone which impeded parturition."

The warm-blooded fertile Mesopotamians we find naturally possessed a *pietra dell' amore della fecondità*; doubtless the parent of Dioscorides' λίθος σεληνιτης, Eo ceu gestamine ad amuletum mulieres utuntur, arbores, adalligato eodem frugiferæ redduntur. The foeman stone of this assistant in the propagation of our species was termed, in cuneiform, the "Stone of the sterile." In it we have the λίθος ὑστραχίτης of Dioscorides, who assures us that with its assistance "feminis præstat ne concipiant."

The inclusion in the old Pharmacopœia of this petrology for parturition is only one more of the strange phases in the life-history of mankind.

FEES FOR MEDICAL ATTENDANCE ON THE WIFE OF A MEDICAL PRACTITIONER.

IN the recent action before Mr. Justice Bailhache in the High Court, in which Dr. F. J. Nicholls sued Mr. P. de Santi and his wife for fees incurred on account of medical attendance on the last-named, judgment was given for the defendants but, at the suggestion of the judge, the amount of any further payment to Dr. Nicholls was referred to Sir Henry Morris as arbitrator. His decision in the matter runs as follows:—

In pursuance of the agreement reached in court before Mr. Justice Bailhache, on May 8th, Dr. Nicholls, the plaintiff in the action, and Mr. de Santi, one of the defendants, attended at 8, Cavendish square, London, W., before me on the 22nd instant (May). Each of the parties in the presence of the other made statements and replied to questions put by me, and as a result I find the facts of the case to be as follows: A total sum of £448 4*s.* was paid at different times to Dr. Nicholls for medical treatment between March 7th, 1912, and August 27th, 1916.

In the earlier period of the attendance the amounts paid to the plaintiff had been received by Mrs. de Santi from her step-father for this purpose.

On June 30th, 1912, Mrs. de Santi expressed her regret that Dr. Nicholls' attendance upon her must cease, as she would no longer be receiving assistance from her step-father. Dr. Nicholls, however, preferred the continuance of his services, and they were accepted, and, as a matter of fact, assistance was received by Mrs. de Santi from her step-father until September, 1914, and all the money so received was paid by her to the plaintiff.

On Feb. 2nd, 1915, the plaintiff gave up attending Mrs. de Santi, but at her request he resumed attendance the next day at a fee of half a guinea for each evening visit, on the understanding, according to the statement of Mr. de Santi, that such fee was to cover the evening visit, morning visit on the following day, and all additional treatment. This fee was paid on each occasion out of moneys provided by Mr. de Santi, though Dr. Nicholls was not aware of this being the case until the meeting here. Dr. Nicholls admitted the receipt of this half-guinea fee on the occasion of each evening visit, but he stated before me that he understood such fee was only to be on account. Any misunderstanding, however, on this point—the only point of difference between the parties on the matters referred to above—is, in my opinion, immaterial, because Dr. Nicholls, in reply to a question put by me, admitted that any payments supplementary to the half-guinea fees would be made by Mrs. de Santi out of moneys received by her from an outside source, and no such moneys since the date of the arrangement made on Feb. 3rd, 1915, have been received by her.

In view of all the above facts, I do not consider that Dr. Nicholls has any moral claim to any further payment, or any ground for thinking he has not been fairly treated by his patient or her husband. I cannot think that any medical man is justified in making a demand for further payment after having received sums of money at the rate of £100 a year for professional attendance upon the family of another medical man. Indeed, during the period since the payment by Mr. de Santi himself of half-guineas commenced Dr. Nicholls has been remunerated at the rate, approximately, of £175 or £180 per annum.

As Dr. Nicholls now knows that all these half-guinea fees were paid out of Mr. de Santi's own pocket, I am of the opinion that he should make the *amende honorable* and express regret to Mr. de Santi for the annoyance caused him by bringing an action at law against him.

FIRST-AID IN MENTAL CASES.

THE practice of first-aid and home nursing in asylums is of real value to both patients and staff, turning good nurses into better nurses, and fostering a general feeling of enthusiasm and loyalty. This has been the experience at Claybury of Sir Robert Armstrong-Jones, who delivered on June 13th the fifth of the lectures on first-aid at the College of Ambulance (3, Vere-street, London, W.), choosing as his subject The Value of First-Aid in the Management of Mental Cases and its Use in Mental Hospitals. During 18 years at Claybury, where some 800 patients are received each year, of whom a quarter had been sent in as "actively suicidal," not one successful suicide occurred, and many attempts by poison, strangulation, and so forth, were frustrated by the knowledge of first-aid possessed by the staff. In many mental institutions the subject is now being taught, and it was claimed by the lecturer that attendants had become more observant and tactful with their patients. For convalescent patients, too, such teaching has a beneficial mental discipline, expediting recovery particularly in the case of soldiers. Under a properly organised system of instruction in elementary nursing, personal hygiene, and sick cookery, mental hospitals might, he thought, become schools for the re-education of patients, as well as centres of education for the staffs. Asylum life would thus become happier and the sense of death more remote. Sir James Crichton-Browne, who presided, said that the lecturer had dwelt on the corporal side of the subject, but the psychical side was equally important. Many patients in asylums were there because they had contracted erroneous habits of thought as a result of some nerve-storm, and these habits must be taken in hand at once if they were to be checked. It was scarcely possible to open an asylum report issued during the past 50 years without finding in it expressions of regret that the patients admitted had not been more promptly dealt with. A recognition of this fact had led to new measures of treatment. The delays entailed by the legal formalities framed to protect the public from infringement of their liberty had led to an increase of insanity, and it was urgently necessary to give greater latitude to the treatment of mental cases in their early stages and to administer first-aid with tact, sympathy, and insight. In the future he thought that psycho-analysis would supplement clinical and post-mortem observation, not of the kind initiated by Freud, but more on the lines of the "moral" treatment recommended by that great psycho-analyst the late Professor Laycock, of Edinburgh.

TUBERCULOSIS IN GIBRALTAR.

IN his report for the year 1917 to the Sanitary Commissioners of Gibraltar the medical officer of health, Colonel G. Dansey-Browning, A.M.S., says that the great blot on the sanitary history of the territory is the incidence of pulmonary tuberculosis, which accounts on the average of the last decade for 29 deaths among a civil population of 18,000. For residents this represents a death-rate of 1·68 per 1000, compared with 1·16 for England and Wales. Up to 1902 the average annual number of deaths from this cause was between 30 and 40; from that year an improvement took place on account of better housing conditions, but this improvement was only of a temporary nature. The highest incidence is at ages 40–44. Of the 31 patients notified during 1917 12 occupied one room together with other members of their family; two lived in two-roomed tenements, and the remainder in flats containing three rooms or more. In three cases only when the disease was notified was the patient found occupying a separate bedroom. The routine adopted on the receipt of a notification is as follows:—

> The medical man in attendance is notified and arrangements made to visit the case. The financial circumstance of the case is inquired into and assistance given when it is necessary to enable the patient to occupy a separate bed. The precautions to be taken are explained to the relatives and disinfectants provided for dealing with the sputum. If the breadwinner is affected and unable to provide himself with suitable rooms he and his family are offered accommodation, when available, in the tuberculosis home. Convalescents are urged to attend the dispensary for treatment, whilst the physical condition of the other members of the family is passed in review.

An average of 53 persons attended the dispensary each month. Fifty-seven families with tuberculous dependents were assisted with food during the year, and 11 families were assisted with financial grants as well as food. 23,241 pints of milk and 14,070 pounds of beef were issued to persons in distressed circumstances. Nine families, consisting of 18 adults and 15 children, were given quarters, rent free, in the tuberculosis home. The whole expenditure on relief under the tuberculosis and destitution scheme amounted to £1639 6s. Colonel Dansey-Browning concludes:

> All these measures are but palliative; the disease will never seriously be reduced until housing conditions in Gibraltar are considerably improved. The prevailing type of back-to-back, ill-lighted, and ill-ventilated houses requires to be demolished and not allowed to be rebuilt, whilst cases of the disease must be notified in their early stages and stringent steps taken to prevent their spreading the infection amongst those with whom they are brought in contact. Spitting in the public streets must be prevented.

A SCIENCE YEAR-BOOK.

THE *Year-Book of the Scientific and Learned Societies of Great Britain and Ireland*, now in its thirty-fourth edition (London: Charles Griffin and Co., Limited, price 9s.), contains, to quote the title-page, "a record of the work done in science, literature, and art during the session 1916-1917, by numerous societies and Government institutions, compiled from official sources." The past year has witnessed an awakening by the State to the need for scientific and industrial research, and many special committees on the subject have been appointed and a joint board of scientific societies formed with the object of promoting coöperation between those engaged in pure science and those concerned with its industrial application. This year-book is therefore extremely useful for reference, and its records of the papers read at the various scientific societies, together with details of the objects of those societies and the names of their officials, should be of great help in preventing overlapping of effort. Of the 324 pages, exclusive of a useful index, of which the book is composed, 56 are devoted to science generally, 23 to chemistry and photography, 39 to biology, including microscopy and anthropology, 7 to psychology, and 38 to medicine.

MEDICAL AUTOGRAPHS.

FOR many years the Reading Pathological Society has been forming a collection of medical autographs, and the collection has recently been enriched by a series of holographs presented by Sir George Makins, containing the autographs of a number of British and foreign delegates to the International Medical Congress held in London in 1881. The society's collection of these documents is now one of the richest in the country, and whenever possible they are accompanied by pictures. No doubt such collections keep green the memories of the masters of medicine.

MOULTING.

OUR medical contemporaries are losing their distinctive colours and becoming a uniform white. The *British Medical Journal* shed its greeny-grey coat during the last week of February, the *Münchener medizinische Wochenschrift* its bright salmon-coloured cover in the third week of March, and the *Paris Médical* its grey exterior in the fourth week of May. The absence of coloured paper is, of course, due to economic reasons, the saving of time and dyeing material. Most of the coloured paper in this country was imported as such from abroad and not dyed here.

THE VETERINARY RECORD OF 1917.[1]

THIS report to the Secretary of the Board of Agriculture and Fisheries, by A. W. Anstruther, takes an abbreviated form owing to war conditions. No case of foot-and-mouth disease occurred. The number of outbreaks of anthrax declined by 150. The position with regard to glanders is very hopeful, 25 outbreaks occurring, as compared with 46 in 1916.

The most unsatisfactory feature of the report is the information with regard to the prevalence of parasitic mange. There was an increase of 467 outbreaks over the figure in 1916, and the number of animals attacked amounted to 4873. The disease caused economic loss by lessening horse power and reduced the number of horses doing very important work under the Board's Food Production Department. The spread of the disease seems undoubtedly due to war conditions, and the new Order just issued may cause less hindrance to valuable work, though it will hardly tend to reduce the number of outbreaks. Sheep scab showed an increase, while swine fever showed a welcome drop, being less than half the number of the previous year. This decline is chiefly attributed to the check upon movement of swine that exists in present circumstances. Treatment of the disease by antiswine fever serum was accepted in 76·5 per cent. of outbreaks. There was some slight disorganisation of the animal traffic from Ireland owing to the purchase and provision for slaughter of home-fed cattle from Ireland from September to December. 145 cases of sheep scab were detected at Birkenhead in consignments from Ireland.

One hundred and seventy-nine horses were shipped under permits for France and Spain, and were for breeding purposes, racing and polo. 373 dogs were landed in Great Britain from abroad. Officers and men are prohibited by the military authorities from taking dogs to France or from bringing dogs from France here unless in the company of a soldier with a licence from the Board. Dogs also are not to be brought from the Continent in air-craft. The numbers of animals landed in this country from Ireland during the year were 888,596 cattle, 763,111 sheep, and 199,331 swine. In sheep and swine these figures show a considerable decrease from the previous year. Vessels used for the transit of animals must still be cleansed and disinfected as heretofore. 547 sheep-dips are now on the approved list, so that the means for dipping sheep, even in these times, must be fairly plentiful.

[1] Annual Report of Proceedings under the Diseases of Animals Acts, the Markets and Fairs (Weighing of Cattle) Acts for the Year 1917. Price 3d. net, purchasable from H.M. Stationery Office.